IBPC 2024

9th INTERNATIONAL BUILDING PHYSICS CONFERENCE
Official Triennial Conference IABP (International Association of Building Physics)

TORONTO METROPOLITAN UNIVERSITY

25, 26, 27 JULY, 2024

PROGRAM

IBPC 2024

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IBPC 2024
9th INTERNATIONAL BUILDING PHYSICS CONFERENCE (IABP)

IBPC 2024 is the ninth edition of the official triennial conference of the International Association of Building Physics (IABP). The IBPC conferences unite researchers, practitioners, educators and students from the building science and building physics sectors worldwide.

We meet to exchange new research and innovative technologies and to discuss current and future challenges and sustainable solutions within building physics, while we support innovative discoveries related to climate change challenges.

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WELCOME MESSAGE

Dear Colleagues,

on behalf of the Organizers, it is our great pleasure and an honor to **welcome you to the IBPC 2024**: the International Association of Building Physics (IABP), which will be held on 25, 26, 27 July, in Toronto, Canada.

The Conference is hosted by the Toronto Metropolitan University (TMU).

IBPC 2024 will be focused on the themes:

- *IAQ/IEQ*
- *Moisture and materials;*
- *Energy Efficiency;*
- *Building Systems and RET;*
- *Acoustics and Lighting;*
- *City Resiliency and Climate Change*

Thanks are due to the many people who have freely given their time and goodwill to make IBPC 2024 a success.

We are grateful to the TMU for the valuable support in the conference.

We would like to thank the members of the International Scientific Committees and the Reviewers whose help has been essential to ensure a high quality.

Important contributors to the conference have been made by the Authors, Presenters, and Delegates, without whom the conference could not take place. We, therefore, offer them our heartfelt thanks.

We hope that you will enjoy the conference program, and take some time to experience the rich culture and history of Toronto.

We wish you a productive, fruitful and enjoyable stay!

Dr. Umberto Berardi
Chair of IBPC2024 Conference
Full Professor
Canada Research Chair in Building Science,
Toronto Metropolitan University

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ABOUT THE VENUE

TORONTO

Toronto is the capital city of the Canadian province of Ontario. With a recorded population of 3 millions, being the most populous city in Canada and the fourth most populous city in North America.

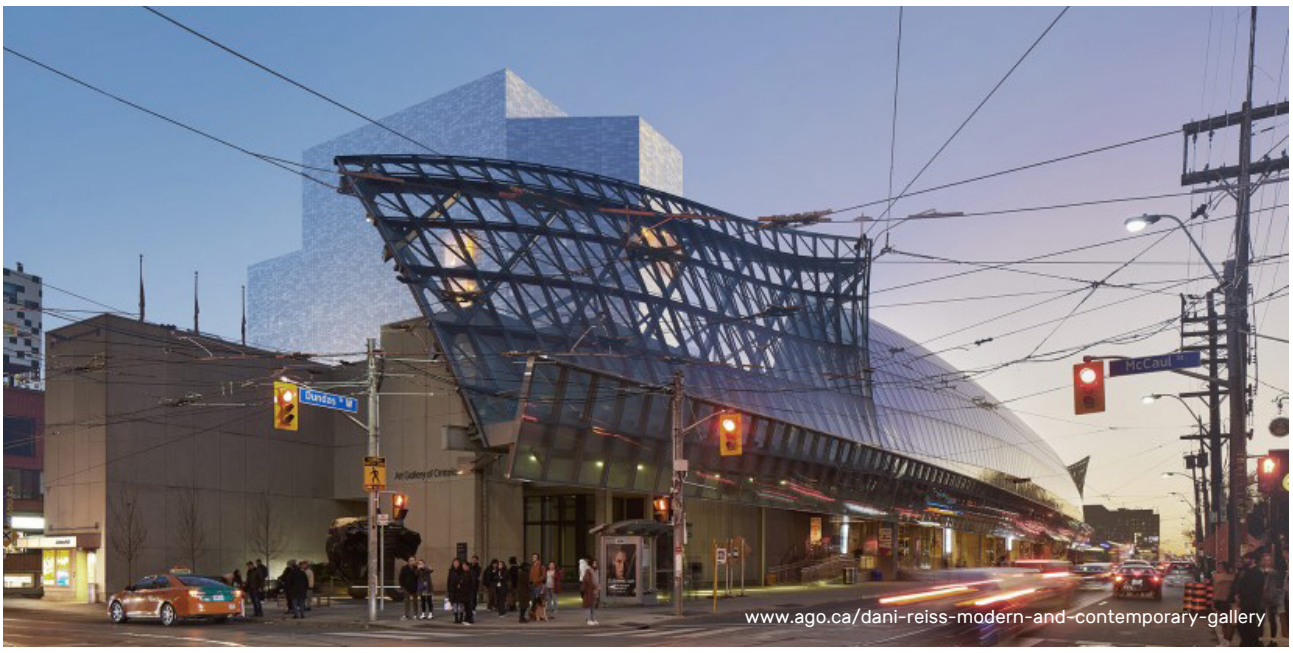
Toronto is a prominent centre for music, theatre, motion picture production and television production, and is home to the headquarters of **Canada's major national broadcast networks and media outlets.**

Its varied cultural institutions which include numerous museums and galleries, festivals and public events, entertainment districts, national historic sites, and sports activities, attract 50 million tourists each year.

Toronto is known for its many skyscrapers and high-rise buildings, in particular the tallest free-standing structure on land outside of Asia, the CN Tower.

Toronto is easy to reach too – having over 1000 daily flights and over 200 hotels downtown, where the conference will be held – in the real core of the city.

Attractions include: the **Royal Ontario Museum** is a museum of world culture and natural history; the Toronto Zoo is home to over 5,000 animals representing over 460 distinct species; the **Art Gallery of Ontario** contains a large collection of Canadian, European, African and contemporary artwork, and also plays host to exhibits from museums and galleries all over the world. The Gardiner Museum of ceramic art is the only museum in Canada entirely devoted to ceramics, and the Museum's collection contains more than 2,900 ceramic works from Asia, the Americas, and Europe.



CONFERENCE MAP

TORONTO

1 CONFERENCE VENUE*

TORONTO METROPOLITAN UNIVERSITY (TMU)

George Vari Engineering and Computing Centre, 245 Church st

2 TMU - DAS Laboratories, Department of Architectural Science, 325 Church st

3 WELCOME COKTAIL

Waterfall Garden, Sheraton Centre Toronto Hotel, 123 Queen St West

GALA DINNER

Dominion Ballroom, Sheraton Centre Toronto Hotel, 123 Queen St West

By plane:

- Toronto Pearson International Airport: www.torontopearson.com

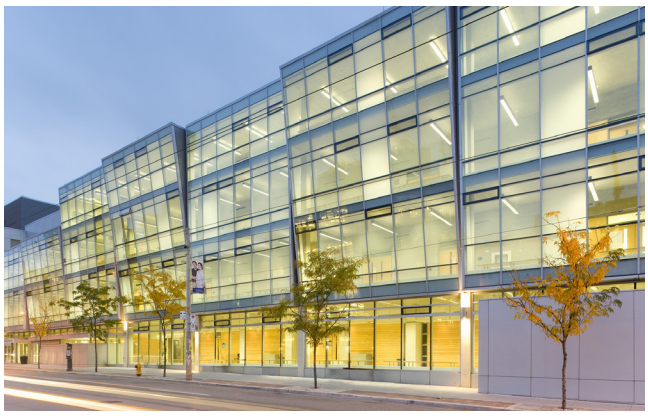
  Distance From TMU: 27 KM
- Billy Bishop Toronto City Airport: www.billybishopairport.com

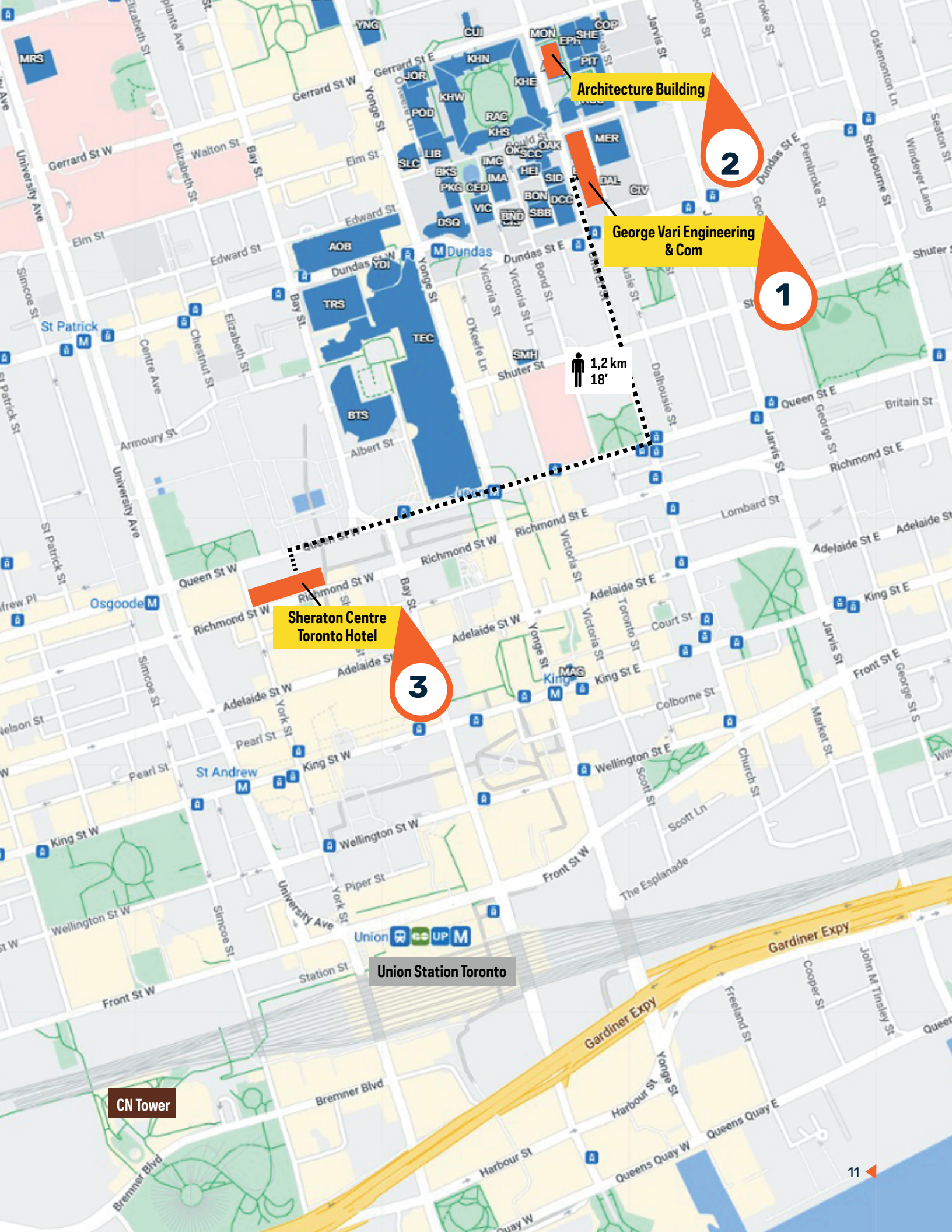
  Distance From TMU: 4.5 KM

Nearby:

- Bus Station: www.gotransit.com
- Queen Subway Station ; www.ttc.ca/subway-stations/queen-station
- Osgoode Subway Station : www.ttc.ca/subway-stations/osgoode-station
- Train Station: www.viarail.ca/en/explore-our-destinations/stations/ontario/toronto

*** The conference will be held at the Toronto Metropolitan University (TMU) in George Vari Engineering and Computing Centre Building.**

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PROGRAM SUMMARY SCHEME

		25 JULY	26 JULY	27 JULY
a.m.	7:30 - 8:30	**Registration** Location: Foyer	**Registration** Location: Foyer	**Registration** Location: Foyer
	8:30 - 9:30	**Opening: IBPC opening** Chair: **Umberto Berardi** Location: Plenary Room	**Keynote 2: Marco Perino** **Can the Building Envelope play a role in the energy transition?** Location: Plenary Room	**Keynote 4: Ursula Eicker** **Digital twins for urban decarbonization strategies** Location: Plenary Room
	9:30 - 10:30	**Keynote 1: Christoph Reinhart** **Building-related carbon reduction strategies for cities and real estate portfolios** Location: Plenary Room	**Keynote 3: Luisa Cabeza** **Thermal energy storage frontiers** Location: Plenary Room	**Keynote 5: Raymond Panneton** **Conventional and unconventional porous materials for building acoustics** Location: Plenary Room
	10:30 - 11:00	Coffee Break Location: Foyer	Coffee Break Location: Foyer	Coffee Break Location: Foyer
p.m.	11:00 - 1:00	**25th Morning: PARALLEL SESSIONS** BUILDING PHYSICS & MOISTURE [1] CLIMATE CHANGE [2] BUILDING TECHNOLOGY [3] ENERGY EFFICIENCY [4] IAQ & IEQ [5]	**26th Morning: PARALLEL SESSIONS** BUILDING PHYSICS & MOISTURE [1] URBAN CLIMATE [2] MATERIALS [3] VENTILATION [4] IAQ & IEQ [5]	**27th Morning: PARALLEL SESSIONS** BUILDING PHYSICS & MOISTURE [1] URBAN CLIMATE [2] MATERIALS [3] LIGHTING [4] BUILDING SYSTEMS & HVAC [5] RENEWABLE ENERGY TECHNOLOGIES [6]
	1:00 - 2:00	Lunch Location: Foyer	Lunch Location: Foyer	Lunch Location: Foyer
	2:00 - 4:00	**25th Early Aft: PARALLEL SESSIONS** BUILDING PHYSICS & MOISTURE [1] CLIMATE CHANGE [2] BUILDING TECHNOLOGY [3] ENERGY EFFICIENCY [4] IAQ & IEQ [5]	**26th Early Aft: PARALLEL SESSIONS** BUILDING PHYSICS & MOISTURE [1] URBAN CLIMATE CHANGE [2] MATERIALS [3] LIGHTING [4] BUILDING SYSTEMS & HVAC [5]	**27th Early Aft: PARALLEL SESSIONS** SUSTAINABILITY [1] URBAN PHYSICS [2] BUILDING TECHNOLOGY [3] ACOUSTICS [4] BUILDING SYSTEMS & HVAC [5] RENEWABLE ENERGY TECHNOLOGIES [6]
	4:00 - 4:30	Coffee Break Location: Foyer	Coffee Break Location: Foyer	**27th Late Aft: PARALLEL SESSIONS** BUILDING RETROFIT [1] POSITIVE ENERGY DISTRICTS [2] BUILDING TECHNOLOGY [3] ACOUSTICS [4] URBAN ENERGY MODELS [5]
	4:30	**25th Late Aft: PARALLEL SESSIONS** BUILDING PHYSICS & MOISTURE[1] URBAN CLIMATE CHANGE [2] BUILDING TECHNOLOG Y [3] ENERGY EFFICIENCY [4] IAQ & IEQ [5]	**26th Late Aft: PARALLEL SESSIONS** BUILDING PHYSICS & MOISTURE[1] ENERGY EFFICIENCY CODES [2] MATERIALS [3] LIGHTING [4] BUILDING SYSTEMS & HVAC [5]	
	5:00 - 5:30	**TMU DAS Lab visit**		**Closing: IBPC closing** **Chair: Umberto Berardi** Location: Plenary room
	6:30			
	7:00 - 9:00	**Welcome cocktail** Location: Waterfall Garden, Sheraton Centre Toronto Hotel	**Gala dinner** Location: Dominion Ballroom, Sheraton Centre Toronto Hotel	

KEYNOTE SPEAKERS

DR. LUISA CABEZA

Full professor,
Universitat de Lleida Llleida, Spain

Thermal energy storage frontiers

Luisa F. Cabeza received her PhD in Industrial Engineering in 1996 from the University Ramon Llull, Barcelona, Spain. She also holds degrees in Chemical Engineering (1992) and in Industrial Engineering (1993), as well as an MBA (1995) from the same University.

Dr Cabeza joined the University of Lleida in 1999 where she created the research group GREA and started her research on thermal energy storage (TES). Her interests include the different TES technologies (sensible, latent and thermochemical), applications (buildings, industry, refrigeration, CSP, etc.), and social aspects.

Dr Cabeza is very active in the storage implementing agreement (ECES IA) of the International Energy Agency. She also acts as subject editor of the journals Renewable Energy, and Solar Energy.

DR. URSULA EICKER

Canada Excellence Research Chair in Smart, Sustainable and Resilient Communities and Cities, Concordia University, Montréal, Canada

Digital twins for urban decarbonization strategies

Prof. Eicker's research interest focuses on zero emission urban transformation. She is working on multiple eco-district projects and is building an urban modeling and data platform to assess urban decarbonization strategies.

Her team develops digital twins with gamification and 3D web interfaces to engage users. She has published 8 books, 20 book contributions, over 140 Peer-Reviewed Papers and more than 340 Conference Papers.

In recent years, Prof. Eicker has developed Tools4Cities, an ambitious urban data, modeling and stakeholder engagement platform to accelerate the transition to zero emission cities. With a multi-scale method, she aims to model retrofit scenarios for individual buildings, neighborhoods and entire cities, account for mobility related carbon emissions and analyze the impact of electrification on the distribution networks.

The keynote shows neighborhood scale modeling approaches, prototype use cases for impact, the science behind the visualization applied to urban challenges, future developments and trends and ways to scale solutions to mitigate climate change.

KEYNOTE SPEAKERS

DR. RAYMOND PANNETON

Department of Mechanical Engineering
Université de Sherbrooke, Canada

Conventional and unconventional porous materials for building acoustics: going beyond conventional limits

Raymond Panneton is a professor-researcher in the Department of Mechanical Engineering at the Université de Sherbrooke since 1998. His research program focuses on the modeling, characterization and optimization of porous acoustic media.

More specifically, he explores the relationships between the macroscopic properties and the local structure of these media by mathematical techniques, homogenization and microtomography. Professor Panneton is affiliated with the Acoustics group at the Université de Sherbrooke (GAUS), which provides an excellent learning and research environment for scientists and graduate students.

In 1998, he co-founded Mecanum Inc., a spin-off company that develops, manufactures and markets specialized characterization equipment and acoustics software. More recently, he has formed a research team on Ecological and structured design of Acoustic Materials (EMA) to promote the use of recycled and recyclable materials in the context of sustainable development.

DR. MARCO PERINO

Full professor of Building Physics
Polytechnic of Turin, Italy

Can the Building Envelope play a role in the energy transition?

Marco Perino is a mechanical engineer and has a PhD in energy technologies. He is full professor of Building Physics at the Polytechnic of Turin. From September 2019 to September 2023 was the Head of the Department of Energy at the Polytechnic of Turin.

In 2002 he was visiting professor at the Aalborg University – Denmark, in 2017 at the Pontificia Universidad Católica de Chile – Santiago del Chile and in 2019 at the Princeton University – Andlinger Center for Energy and the Environment, New Jersey – US.

He participated at the research activities of the Annex 26, 35, 44, 59, 65, 87 of the International Energy Agency (IEA). He is member of the international Scientific Committee of most of the relevant conferences in his field of research. He is reviewer for various international scientific journals.
He was the chairman of the International Building Physics Conference (IBPC 2015) and was the chairman of the International Association of Building Physics (IABP) from 2015 to 2018.

His research activity is summarized by more than 200 scientific papers published on national and international conference proceedings and on national and international journals.

KEYNOTE SPEAKERS

DR. CHRISTOPH REINHART

Alan and Terri Spoon Professor of Architecture
and Climate, Head of the Sustainable Design Lab
Massachusetts Institute of Technology Cambridge,
MA, USA

Building-related carbon reduction strategies for cities and real estate portfolios

Christoph Reinhart is a building scientist and architectural educator working in the field of sustainable building design and environmental modeling.
At MIT, he is the inaugural Alan and Terri Spoon Professor of Architecture and Climate, Director of the Building Technology Program and head of the Sustainable Design Lab (SDL), an inter-disciplinary group with a grounding in architecture that develops design workflows, planning tools and metrics to evaluate the environmental performance of buildings and neighborhoods.
He is also a managing member at Solemma, a technology company and Harvard university spinoff, and served as strategic development advisor for MIT spinoff mapdwell until it joined Palmetto Clean Technology in 2021. Planning tools originating from SDL and Solemma are used in practice and education in over 90 countries.

CONFERENCE AGENDA day 1

Thursday, 25 JULY 2024

a.m.	7:30 - 9:00	**Registration** Location: Foyer				
	9:00 - 9:30	**Opening: IBPC opening** Location: **Plenary Room** Chair: Umberto Berardi				
	9:30 - 10:30	**Keynote 1: Christoph Reinhart** **Building-related carbon reduction strategies for cities and real estate portfolios** Location: **Plenary Room**				
	10:30 - 11:00	**Coffee Break** Location: Foyer				
		25th Morning_1: **BUILDING PHYSICS AND MOISTURE** Location: **Room 1** Chair: Valentina Serra	**25th Morning_2:** **CLIMATE CHANGE** Location: **Room 2** Chair: Dominique Derome	**25th Morning_3:** **BUILDING TECHNOLOGY** Location: **Room 3** Chair: Marco Perino	**25th Morning_4:** **ENERGY EFFICIENCY** Location: **Room 4** Chair: Jakub Curpek	**25th Morning_5:** **IAQ & IEQ** Location: **Room 5** Chair: Carsten Rode
	11:00 - 11:15	11:00am - 11:15am **Effect of extruded mortar joints on mould growth in timber frame wall with brick veneer: Probabilistic and Machine Learning Modelling** Mohsen Bayat Pour, Seyedmohammad Kahangi Shahreza, Akram Abdul Hamid	11:00am - 11:15am **Investigation of the Impact of Climate on Indoor Environmental Preferences of Social Housing Residents in the Eastern Mediterranean Climate of Cyprus** Bertug Ozarisoy, Hasim Altan	11:00am - 11:15am **Optimal materials and configurations for permeable pavements** Laura Peeters, Hans Janssen	11:00am - 11:15am **The role of energy efficiency design decisions in the embodied carbon of detached houses** Luka Pajek, Jaka Potočnik, David Božiček, Mitja Košir	11:00am - 11:15am **Datamining smart thermostat use in homes to understand COVID-19 and telework-induced behaviors** Melina Sirati, Aya Doma, William O'Brien, Cynthia A. Cruickshank
	11:15 - 11:30	11:15am - 11:30am **Clay plaster as a moisture buffer for a low-emission buildings** Piotr Kosiński, Robert Wójcik, Przemysław Brzyski, Mariusz Kostowicki, Mateusz Rzepski	11:15am - 11:30am **Predicting the Impact of Climate Change on Operational Carbon Emissions and Thermal Comfort in the Housing Stock of Jordan** Reham Alasmar, Yair Schwartz, Esfandiar Burman	11:15am - 11:30am **External heat storage and energy generation pole: experimental investigation and modelling of a novel sustainable solution for building temperature control** Svenja Carrigan, Birke Schröter, Jonas Spiegel, Oliver Kornadt	11:15am - 11:30am **Zero Energy Buildings Concept, Principles, and Factors Integrated passive architecture features and building materials in energy saving aspects** Osama Omar	11:15am - 11:30am **Showering thermal physiology and energy consumption** Dadi Zhang, Kwok Wai Mui, Ling Tim Wong
	11:30 - 11:45	11:30am - 11:45am **Spatial distribution of wind and driving rain on façades and associated hygrothermal response.** Bruno Vanderschelden, Aytaç Kubilay, Tim De Kock, Veerle Cnudde, Nathan Van Den Bossche	11:30am - 11:45am **The influence of climate change and interior insulation on salt damage in masonry facades** Kaat Janssens, Sebastiaan Godts, Scott Allan Orr, Valentina Marincioni, Nathan Van Den Bossche	11:30am - 11:45am **Impact of marine atmospheric corrosion on thermophysical properties of building coatings** Junsong Wang, Chuanrui Li, Qinqlin Meng, ya zou	11:30am - 11:45am **Impact of excitation signal on a predictive model used to harness energy flexibility of a dwelling** Arash Erfani, Tohid Jafarinejad, Staf Roels, Dirk Saelens	11:30am - 11:45am **Indoor thermal requirements of people with autism spectrum condition: preliminary results from a controlled environment study** Luca Zaniboni, Emilie Rasmussen, Emil Engstrøm Bruun, Jørn Toftum
	11:45 - 12:00	11:45am - 12:00am **The impact of hydrophilic pores on the moisture behaviour in hydrophobised building materials** Daan Deckers, Hans Janssen	11:45am - 12:00am **Establishing current and future projected extreme rainfall magnitudes and distributions for the evaluation of nature-based solutions on commercial roofs in Canada** Abhishek Gaur, Maha Dabas, Sudhakar Molleti	11:45am - 12:00am **Dynamic shading device with phase change materials: a proof-of-concept towards improving thermal comfort** Margarida Gonçalves, António Figueiredo, Ricardo M.S.F. Almeida, Romeu Vicente, António Samagaio	11:45am - 12:00am **The accuracy of gas demand disaggregation into space heating, domestic hot water, and cooking demands using diverse models and datasets** Sara Willems, Jeroen Smeets, Dirk Saelens	11:45am - 12:00am **Modelling of Thermostat Use Behaviour in Residential Buildings with Decentralized Heating Systems** zeinab khorasani zadeh, Mohamed Ouf, Burak Gunay, Benoit Delcroix, Gilbert Larochellemartin, Ahmed Daoud

CONFERENCE AGENDA day 1

Thursday, 25 JULY 2024

	12:00 - 12:15	12:00am - 12:15am **Risk Assessment from Unfavourable Moisture and Water in Innovative Timber Façade: A Participatory Approach** Arian Loli, Johannes Brozovsky, Katarzyna Ostapska, Guilherme Barreto Arez Coelho, Dimitrios Kraniotis	12:00am - 12:15am **The Impacts of Future Climate Change Projections on the Outdoor Thermal Comfort Patterns of Auckland, NewZealand** Saghar Hashemi, Amirhosein Ghaffarianhoseini, Ali Ghaffarianhoseini, Nicola Naismith	12:00am - 12:15am **Experimental study on hygrothermal performance and durability of sandwich wall panels made of fiber reinforced AAC and PU foam insulation** Paul Klõšeiko, Martin Talvik, Kaspar Kaljuvee, Tanel Tuisk, Simo Ilomets	12:00am - 12:15am **Assessment of the efficacy of short-term energy saving measures for a sample of Italian schools** Angelica El Hokayem, Giovanni Pernigotto, Andrea Gasparella	12:00am - 12:15am **Numerical investigations on thermal environment in high-rise office atrium building: A case study in Xi'an, China** Meifang Su, Pengyu Jie, Xing Shi
	12:15 - 12:30	12:15am - 12:30am **Hygrothermal Analyses of Swedish Buildings: A Review of International Approaches for Development of Climate Reference Periods** Assad Mohammad Tahir, Akram Abdul Hamid, Petter Wallentén, Jesper Arfvidsson	12:15am - 12:30am **School energy retrofit in a changing climate: optimization of retrofit strategies and cost implications** Ludovica Maria Campagna, Francesco Carlucci, Francesco Fiorito	12:15am - 12:30am **Supplementing UK Hotel Building Envelope Information for Physics Modelling with Data-Driven Approaches Based on Public Datasets** Jingfeng Zhou, Ivan Korolija, Pamela Fennell, Paul Ruyssevelt	12:15am - 12:30am **Short-term load prediction for building energy management at the University of Ottawa** Sajad Salehi, Miroslava Kavgic, Luc Begnoche	12:15am - 12:30am **Development and in-field application of a system for indoor environmental quality monitoring and occupants' feedback collection** Virginia Isabella Fissore, Alberto Barbaro, Pietro Chiavassa, Gustavo Adolfo Ramirez Espinosa, Edoardo Giusto, Giuseppina Emma Puglisi, Erica Raviola, Louena Shtrepi, Antonio Servetti, Bartolomeo Montrucchio, Franco Fiori, Arianna Astolfi
	12:30 - 12:45	12:30am - 12:45am **Potential impacts of sealing methods on the reliability of water absorption tests** Kazuma Fukui, Satoru Takada	12:30am - 12:45am **Insights from an experimental campaign to assess urban outdoor comfort conditions** Natalia Alexandra Bernal Quintero, Martina Ferrando, Alessia Banfi, Riccardo Mereu, Francesco Causone	12:30am - 12:45am **Climate-Responsive Building Retrofitting: Insulation Strategies in a Changing Environment** Hassan Bazazzadeh, Raziyeh Rezadoost Dezfuli, Umberto Berardi, Adam Nadolny	12:30am - 12:45am **Application of Metamodel-Based Evolutionary Optimizer (MEVO) to improve energy efficiency of a dormitory building in Canada** Farzad Mostafazadeh, Yasaman Dadras, Miroslava Kavgic, Rafael Batres	12:30am - 12:45am **Field study on thermal comfort and CO_2 concentration in school classrooms in hot-humid climate Malaysia** Nor Sahidah Firman, Sheikh Ahmad Zaki, Ng Wai Tuck, Manoj Kumar Singh, Hom Bahadur Rijal
	12:45 - 1:00	12:45am - 1:00pm **User impact as an uncertainty in hygrothermal simulations: insights from a round robin test** Xinyuan Dang, Hans Janssen, Staf Roels	12:45am - 1:00pm **Prediction of outdoor thermal comfort during heat waves based on coupled microclimate simulations in various neighborhoods in Swiss cities** Aytaç Kubilay, Dominik Strebel, Dominique Derome, Jan Carmeliet	12:45am - 1:00pm **Impact of floor impact sound insulation structure on the thermal performance of radiant floor heating systems in apartment buildings** Rosa Seo, Kyu-Nam Rhee	12:45am - 1:00pm **Transforming Downtown Vancouver: Smart Glass Solutions for Energy-Efficient Office Building Envelopes and Well-being** Md Fahad Islam	12:45am - 1:00pm **Personalized Comfort Models Definition through Physiological and Environmental Data Gathered during Commuting Activities** Puneet Tomar, Veronica Martins Gnecco, Ilaria Pigliautile, Anna Laura Pisello
p.m.	1:00 - 2:00	**Lunch** Location: Foyer				
		25th Early Aft_1: **BUILDING PHYSICS AND MOISTURE** Location: **Room 1** Chair: Fitsum Tariku	**25th Early Aft_2:** **CLIMATE CHANGE** Location: **Room 2** Chair: Ali Ghaffarianhoseini	**25th Early Aft_3:** **BUILDING TECHNOLOGY** Location: **Room 3** Chair: Vincenzo Corrado	**25th Early Aft_4:** **ENERGY EFFICIENCY** Location: **Room 4** Chair: Francesco Causone	**25th Early Aft_5:** **IAQ & IEQ** Location: **Room 5** Chair: Cynthia Cruickshank
	2:00 - 2:15	2:00pm - 2:15pm **Probabilistic distributions of moisture damages in Swedish buildings** Pei-Yu Wu, Tim Johansson, S. Olof Mundt-Petersen, Kristina Mjörnell	2:00pm - 2:15pm **Quantifying Thermal Resilience with Energy Efficiency in Residential Building Stock Models** Kritika Kharbanda, Holly Samuelson	2:00pm - 2:15pm **Analysis of thermal insulation system for summer heat protection under different climatic conditions using wireless measuring system** Ayman Bishara, Helge Kramberger-Kaplan, Nadja Bishara	2:00pm - 2:15pm **Smart energy retrofit of historical buildings: preliminary assessment of its potential for a case-study in South Tyrol, Italy** Riccardo Albertin, Cristian Budai, Andrea Gasparella, Giovanni Pernigotto	2:00pm - 2:15pm **Describing acclimatation time in test room experiments: improving human-centric comfort assessment procedures** Veronica Martins Gnecco, Agnese Chiucchiù, Ilaria Pigliautile, Silvia Angela Mansi, Gloria Consoli, Marco Arnesano, Anna Laura Pisello

CONFERENCE AGENDA day 1

Thursday, 25 JULY 2024

2:15 - 2:30	2:15pm - 2:30pm **Reproduction of Moisture Absorption and Permeation in Porous Building Materials using Hygrothermal Analysis Assuming Heterogeneity and Local Non-Equilibrium** Satoshi Iwamoto, Kazuma Fukui, Satoru Takada	2:15pm - 2:30pm **Evaluating Climate Change Impacts on Zero-Energy Building performance in Morocco's Semi-Arid Climate: Residential Building Case study** Mohamed Oualid Mghazli, Myriam Bahrar, Nouzha Lamdouar, Mohamed Elmankibi	2:15pm - 2:30pm **Multi-objective Optimization Design for Windows and Shading Configuration Considering Supply-demand Matching** Xinyu Yang, Xin Zhou, Jinjing Zhao	2:15pm - 2:30pm **The Impact of High-Rise Office Building Morphology With Controlled Environment on Energy Performance in the Mediterranean Context** Kevis Çela, Ina Dervishi, Sokol Dervishi	2:15pm - 2:30pm **Exploring the interplay between office environment and occupants' satisfaction** Andrea Silei, Carla Balocco, Cristina Piselli, Fabio Sciurpi
2:30 - 2:45	2:30pm - 2:45pm **Moisture sources inbuildings located incold climates** Dorotea H Sigurdardottir	2:30pm - 2:45pm **Investigation of the Impact of Wind Environment on Urban Building Energy: A Performance Simulation Framework with a Case Study of Shanghai, China** Pengyu Jie, Yuchu Shi, Meifang Su, Xing Shi	2:30pm - 2:45pm **Dynamic façade system for building retrofitting: a numerical study on a tertiary building in Italy** Luigi Tufano, Michelangelo Scorpio, Yorgos Spanodimitriou, Alfonso Carola, Marco Donisi, Giovanni Ciampi	2:30pm - 2:45pm **A multi-level Risk Assessment in Nearly Zero Energy Buildings – A Review** Joud Aljumaa Aldakheel, Myriam Bahrar, Mohamed El Mankibi	2:30pm - 2:45pm **Integrating thermal comfort indices for experimental comfort investigation and modeling: A Permutation analysis** Silvia Angela Mansi, Veronica Martins Gnecco, Ilaria Pigliautile, Anna Laura Pisello, Marco Arnesano
2:45 - 3:00	2:45pm - 3:00pm **A response-based analysis of the algaerisk on brick substrateunder the impact ofclimate parametersand material characteristics** Xiaolin Chen, Nathan VanDen Bossche	2:45pm - 3:00pm **Artificial Intelligence for the Creation of Future Weather Files in Building Physics Simulations** Sila Gulgec, Jacqueline Lu, Barbara Gao, Adithya Sivanandam, Robert K Otani	2:45pm - 3:00pm **Contrasting building performance and thermal resiliency: a simulation-based quantitative evaluation framework for evaluating the impact of building envelope technologies** Milad Heiranipour, Miren Juaristi Gutierrez, Stefano Avesani, Fabio Favoino, Valentina Serra	2:45pm - 3:00pm **Enhancing Building Thermographic Analysis: Novel Pre and Post-Processing Algorithms for Non-Georeferenced Images** Ligia Moga, Ioan Moga, Ioana Moldovan, Teodora Soimosan, Mihai Radulescu, Adrian Radulescu, Iancu Ionut	2:45pm - 3:00pm **Comparison of fatigue recovery effects with natural ventilation and air conditioning during summer sleep** Noriko Umemiya, Sayaka Tsuji
3:00 - 3:15	3:00pm - 3:15pm **Deposition of rain inthe built environmentstudied at dropletscale: rain dropletimpact, film formingand runoff** Maude Dias, Dominique Derome	3:00pm - 3:15pm **Impact of the type of weather files on the outcome of a weather-based climate classification: the case of Brazil** Mario Alves da Silva, Giovanni Pernigotto, Alessandro Prada, Andrea Gasparella, Joyce Carlo	3:00pm - 3:15pm **The impact of occupant window operation on indoor temperature and air quality during the cooling season.** Aneesha Madabhushi, Martin Tenpierik, Alessandra Luna Navarro	3:00pm - 3:15pm **Study on Operational Carbon Performance of Residential Archetype Buildings in Canada** Michal Bartko, Mehdi Ghobadi	3:00pm - 3:15pm **Spatio-temporal characterization and short-term prediction of indoor temperature in multi-zone buildings** Marco Savino Piscitelli, Qichao Ye, Roberto Chiosa, Alfonso Capozzoli
3:15 - 3:30	3:15pm - 3:30pm **Anomalous wetting of hierarchical porous materials studied by time-resolved imaging and pore network modelling** Robert Fischer, Dominique Derome, Jan Carmeliet	3:15pm - 3:30pm **Evaluating the Impact of Climate Change on HVAC Energy Profiles of Residential Dorms using Generative Adversarial Network** Pratik Raj Pandey, Bing Dong	3:15pm - 3:30pm **Implementation of a calculation code for the energy modelling of Vertical Greenery Systems** Valeria Nesci, Ilaria Ballarini, Vincenzo Corrado	3:15pm - 3:30pm **Impact of Thermal Mass on Building Energy Efficiency** Ibrahim Agah Tastemir, Umit Turgay Arpacioglu	3:15pm - 3:30pm **Longitudinal assessment of indoor environment in existing UK social housing dwellings in need of energy retrofits** Rajat Gupta, Yuanhong Zhong
3:30 - 3:45	3:30pm - 3:45pm **Biot's coefficient estimation for a substrate clay material in historical wall paintings using humidity-induced strain** Kazuki Ishikawa, Daisuke Ogura, Chiemi Iba, Nobumitsu Takatori, Soichiro Wakiya	3:30pm - 3:45pm **The durability of façades and their resilience in a changing climate** Jéssica Deise Bersch, Maria Paula Mendes, Angela Borges Masuero, Denise Dal Molin, Inês Flores-Colen	3:30pm - 3:45pm **Effect of growing media thickness and model input parameters in green roof thermal and moisture dynamics** Dmitrii Konkov, Fitsum Tariku	3:30pm - 3:45pm **Evaluating the Operational Energy Benefits and Durability of Cross-Laminated Timber Construction in Varied Climates** Mikael Salonvaara, Gabriel Flechas, Paulo Tabares	3:30pm - 3:45pm **Tailored Comfort: Revealing Targeted Body Parts for Energy-Efficient Localized Heating and Cooling Systems** Seyed Mohammad Hooshmand, Isabel Mino-Rodriguez, Hui Zhang, Andreas Wagner

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Thursday, 25 JULY 2024

	3:45 - 4:00	3:45pm - 4:00pm **Hygrothermal Performance Assessment of a Paper-Based Building Envelope – In-Situ Monitoring and Numerical Analysis** Nadja Bishara	3:45pm - 4:00pm **Future-Proofing Building Retrofits: Developing a Surrogate Model for Climate Change Adaptation** Mostafa M. Saad, Ursula Eicker	3:45pm - 4:00pm **Development and Validation of an Advanced Green Roof Energy Model** Dmitrii Konkov, Fitsum Tariku	3:45pm - 4:00pm **Effect of urban morphology on solar energy potential for buildings based on deep learning algorithms** Jia Tian, Ryozo Ooka	3:45pm - 4:00pm **Fungal community and diversity in a frequently ventilated Traditional and Modern Japanese House** Tomohide Akiyama, Jianjian Hou, Daisuke Ogura, Makiko Nakajima, Fumito Maruyama, So Fujiyoshi, Jun Noda, Ayako Fujieda
p.m.	4:00 - 4:30	**Coffee Break** Location: Foyer				
	4:30 - 6:30	**25th Late Aft_1:** **BUILDING PHYSICS AND MOISTURE** Location: **Room 1** Chair: Kazuki Ishikawa	**25th Late Aft_2:** **CLIMATE CHANGE** Location: **Room 2** Chair: Anna Laura Pisello	**25th Late Aft_3:** **BUILDING TECHNOLOGY** Location: **Room 3** Chair: Valentina Marincioni	**25th Late Aft_4:** **ENERGY EFFICIENCY** Location: **Room 4** Chair: Ryozo Ooka	**25th Late Aft_5:** **IAQ & IEQ** Location: **Room 5** Chair: Arianna Brambilla
		4:30pm - 4:45pm **Wind Driven Rain Analysis for Effective Industrial Building Design in Singapore to Mitigate Rainwater Penetration** Hee Joo Poh, Cheng Hui Eng, Raunak Tibrewala, Ben Malin, Kendrick Kai Huang Tan, Kenneth Tung, Wang Jian Honardy Rayawang, Dominique Derome, Jan Carmeliet, Gabriel McGrane	4:30pm - 4:45pm **Comparing the Effects of Cool Roofs on Cooling Energy Demands in Three Canadian Cities** Bahador Ziaeemehr, Zahra Jandaghian, Hua Ge, Michael Lacasse	4:30pm - 4:45pm **Control-Oriented Integrated Environment Digital Twin Modeling and Simulation Toolkit for Building Facades** Hanyu Zhou, Gang Liu, Lixiong Wang	4:30pm - 4:45pm **Optimizing Building Design for Energy Efficiency of Buildings in Kabul, Afghanistan: A Study of Costeffective Passive Strategies** Mustafa Karimi	4:30pm - 4:45pm **Long-term monitoring of the indoor environmental quality in two apartments in Jordan** Ahmad Almomani, Ricardo Almeida, Romeu Vicente, Eva Barreira
	4:45 - 5:00	4:45pm - 5:00pm **Wind driven rain on building facades sheltered by trees** Léopold Giroux-Gauthier, Audrey Maheux, Jan Carmeliet, Aytaç Kubilay, Dominique Derome	4:45pm - 5:00pm **Nature-based solutions for environmental and health risk management** Abhishek Gaur, Maha Dabas, Sudhakar Molleti	4:45pm - 5:00pm **Energy and indoor environment quality performance predictions for the syn. ikia multiresidential demonstration projects** Daniel Satola, Inger Andersen, Niki Gaitani	4:45pm - 5:00pm **A state-of-the-art review on scaling and similarity analysis of thermal flow in the built environment using helium gas** Kexin Zheng, Xin Zhang, Monireh Aram, Dahai Qi, Yongling Zhao, Liangzhu {Leon} Wang, Dominique Derome, Jan Carmeliet	4:45pm - 5:00pm **In-situ assessment of Indoor Air Quality through monitoring Key Environmental Indicators** Myriam Bahrar, Joud Aljumaa Aldakheel, Mohamed El Mankibi
	5:00 - 5:15	5:00pm - 5:15pm **Combining high-resolution 3D models with computational SPH for understanding WDR loads and run-off on traditional buildings** Adam Frost, Lyn Wilson, Josep Grau-Bove, Scott Orr	5:00pm - 5:15pm **Analysis of heat-related health outcomes of indoor overheating on the elderly in Canadian residential buildings using connected thermostat data** Farid Bahiraei, Zahra Jandaghian, Abdelaziz Laouadi	5:00pm - 5:15pm **Impact of adaptive façade technologies on the Smart Readiness Indicator (SRI)** Pablo Martinez-Alcaraz, Pedro de la Barra, Alessandra Luna-Navarro	5:00pm - 5:15pm **Evaluating and Optimizing Energy Consumption in Large Sports Centers** Dante Maria Gandola, Francesco Asdrubali, Dario Ballarano	5:00pm - 5:15pm **Overall comfort and satisfaction prediction models in educational building** Ilaria Pittana, Federica Morandi, Andrea Gasparella, Athanasios Tzempelikos, Francesca Cappelletti
	5:15 - 5:30	5:15pm - 5:30pm **A small-scale test setup for measurement of moisture in wall assemblies during runoff wetting and drying** Ali Naman Karim, Angela Sasic Kalagasidis, Pär Johansson	5:15pm - 5:30pm **Utilization of Urban District Morphology for Optimal Energy Performance: A Case Study in Ankara, Turkey** Ayşe Özlem Dal Koçoglu, Touraj Ashrafian	5:15pm - 5:30pm **How Adaptive Façade Can Contribute to Energy Saving in Tall Buildings?** Mehdi Ghiai	5:15pm - 5:30pm **An analysis of building occupancy patterns based on Time Use Survey data** Alessia Banfi, Martina Ferrando, Jeetika Malik, Tianzhen Hong, Francesco Causone	5:15pm - 5:30pm **On clothing adaptation and its impact on thermal sensation and PMV in classrooms** Ilaria Pittana, Federica Morandi, Francesca Cappelletti, Athanasios Tzempelikos, Andrea Gasparella

CONFERENCE AGENDA day 1

Thursday, 25 JULY 2024

<table>
<tr><td>5:30
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5:45</td><td>5:30pm - 5:45pm

Study on the effect of curtain folds on the amount of dew condensation and airflow on window surfaces
Kaori Kobayakawa, Daisuke Ogura</td><td rowspan="2">TMU DAS Lab visits

Location: Department of Architectural Science

Please note:
Visits to the Labs depart every 30 minutes [5:30/6:00/6:30 pm]
We accept 20 people per shift.

www.torontomu.ca/architectural-science/studios-facilities/building-science-lab/

www.torontomu.ca/architectural-science/studios-facilities/betop-/</td><td>5:30pm - 5:45pm

Enhancing Building Energy Efficiency with Window Retrofit Technologies: An Experimental Study at the BeTOP Test Cell Facility in Toronto
Khaled khaled, Umberto Berardi</td><td>5:30pm - 5:45pm

An analysis of building occupancy patterns based on Time Use Survey data
Alessia Banfi, Martina Ferrando, Jeetika Malik, Tianzhen Hong, Francesco Causone</td><td>5:30pm - 5:45pm

Individual room temperature control: does its impact evolve as consequence of climate change in a temperate maritime climate?
Lotte Van Thillo, Amaryllis Audenaert, Stijn Verbeke</td></tr>
<tr><td>5:45
-
6:00</td><td>5:45pm - 6:00pm

Research on downscaling prediction method of wind environment based on prototype block models
Xiaohan Shen, Xin Zhou, Rongmao Xu, Jinjing Zhao, Gerui Sui</td><td></td><td>5:45pm - 6:00pm

Biomass-Based CCHPSystem: Feasibility forHistoric Buildings
Maurizio Cellura, Simona Di Fraia, Musannif Shah, Laura Vanoli, Valentina Coccia, Franco Cotana, Francesco Guarino</td><td>5:45pm - 6:00pm

Personalised Building Controls Based on Individual Thermal Preferences for Energy Efficiency and Comfort
Pablo Martinez-Alcaraz, Pedro de la Barra, Charalampos P. Andriotis, Yan Wang, Alessandra Luna-Navarro</td></tr>
<tr><td>6:00
-
6:15</td><td>6:00pm - 6:15pm

Mould Risk Model Development for a Novel Interior Sheathing Materials: Laboratory Testing of Magnesium Oxide Board
Helen Stopps, Erika Arriola, Uyen Bui, Yuan Embellado, Odel Linetska, Callista Permana, Christina Vo, David Gorodetsky, Sarah Haines</td><td colspan="3" rowspan="2">TMU DAS Lab visits

Location: Department of Architectural Science

Please note:
Visits to the Labs depart every 30 minutes [5:30/6:00/6:30 pm]
We accept 20 people per shift.

www.torontomu.ca/architectural-science/studios-facilities/building-science-lab/

www.torontomu.ca/architectural-science/studios-facilities/betop-/</td><td>6:00pm - 6:15pm

Identification of factors influencing satisfaction with interaction strategies by clustering occupants in buildings
Pedro de la Barra, Pablo Martinez-Alcaraz, Alessandra Luna-Navarro</td></tr>
<tr><td>6:15
-
6:30</td><td>6:15pm - 6:30pm

Hygrothermal Properties of Mortar Layers: Implications for Freeze-Thaw Damage in Brick Walls
Huarong XIE, Lei Huo, Yanan Li, Changchang Xia, Yonghui Li, Shuichi Hokoi</td><td>6:15pm - 6:30pm

Atmospheric chloride penetration into traditional building facades in tropical marine environments
Chuanrui Li, Qinglin Meng, Junsong Wang</td></tr>
<tr><td>7:00
-
9:00</td><td colspan="4">Welcome cocktail
Location: Waterfall Garden, Sheraton Centre Toronto Hotel</td></tr>
</table>

CONFERENCE AGENDA day 2

Friday, 26 JULY 2024

a.m.	7:30 - 8:30	**Registration** Location: Foyer				
	8:30 - 9:30	**Keynote 2: Marco Perino** **Can the Building Envelope play a role in the energy transition?** Location: **Plenary Room**				
	9:30 - 10:30	**Keynote 3: Luisa Cabeza** **Thermal energy storage frontiers** Location: **Plenary Room**				
	10:30 - 11:00	**Coffee Break** Location: Foyer				
		26th Morning_1: **BUILDING PHYSICS AND MOISTURE** Location: **Room 1** Chair: Alessandra Luna Navarro	**26th Morning_2:** **URBAN CLIMATE** Location: **Room 2** Chair: Osama Mohamed Omar	**26th Morning_3:** **MATERIALS** Location: **Room 3** Chair: Miroslav Cekon	**26th Morning_4:** **VENTILATION** Location: **Room 4** Chair: Francesca Cappelletti	**26th Morning_5:** **IAQ & IEQ** Location: **Room 5** Chair: Elisa Di Giuseppe
	11:00 - 11:15	11:00am - 11:15am **Hygrothermal performance of exterior walls in cold climate: a field study** Diane Bastien, Martin Winther-Gaasvig, Lies Vanhoutteghem, Ann Dorte Perneki, Hua Ge	11:00am - 11:15am **Improved meso- and microscale simulation of outside thermal comfort and application in building physics** Dominik Strebel, Xiaotian Ding, Yongling Zhao, Yifan Fan, Jan Carmeliet	11:00am - 11:15am **Durability and reusability assessment of naturally aged synthetic foam insulation in existing buildings** Gentiel Acar, Nathan Van Den Bossche, Marijke Steeman	11:00am - 11:15am **Effects of airtightness and ventilation on the humidity environment of non-residential spaces in detached houses** Yusuke Debata, Daisuke Ogura	11:00am - 11:15am **Influence of sensing infrastructure resolution and comfort models integration on the thermal comfort evaluation of an office space** Manuela Baracani, Giada Letizia Belviso, Fabio Favoino, Valentina Serra, Anna Pellegrino
	11:15 - 11:30	11:15am - 11:30am **Effects of water immersion on the hygrothermal environment of the Sichuan cliff tomb** Ruohan Zhang, Shuai Han, Huarong Xie, Shuichi Hokoi, Yonghui Li	11:15am - 11:30am **Influence of urban microclimate on the energy performance of buildings of complex shapes in different district layouts and climates** Gregorio Borelli, Federico Battini, Giovanni Pernigotto, Andrea Gasparella	11:15am - 11:30am **Investigating the modulation of spectral properties on a multilayer thermochromic coating for selective urban heat island mitigation** Sofia Morales-Inzunza, Marcos Eduardo González-Trevizo, Karen Estrella Martínez-Torres, Ulises Jesús Tamayo-Perez	11:15am - 11:30am **Evaluation of Heuristic Optimization Algorithms for Model Predictive Ventilation Control and Reducing Energy Consumption** Ryan Bielenda, Fitsum Tariku	11:15am - 11:30am **HVAC Strategies for Mitigating the Spread of COVID-19 in High-Rise Residential Buildings** Biruk Workneh, Tony Quach, Ashan Poobalasingam, Hamna Usmani, Alan S. Fung
	11:30 - 11:45	11:30am - 11:45am **Measurement of moisture absorption and diffusivity of sintered bricks containing Na2SO4** Zixin Yang, Siqi Zhu, Huarong Xie, Zhenyi Kong, Yonghui Li, Shuichi Hokoi	11:30am - 11:45am **Correlation between urban forms and the temperature of local climate zones – A case study of Shanghai, China** Sihong Du, Xing Shi	11:30am - 11:45am **PCM-incorporated Building Envelope for improving cost savings in residential buildings under cold climates** Hang Yin, Alireza Norouziasas, Mohamed Hamdy	11:30am - 11:45am **Study on evaluation of indoor thermal environment of different scales grocery stores based on CFD analysis** Hao Liu, Chenghao Wei, Miwako Fujita, Daisuke Narumi	11:30am - 11:45am **Open Plenums and indoor ENvironments (OPEN): Evaluating indoor air quality in office spaces** Nehul Agarwal, Sabato Leo, Tianyuan Li, Helen Stopps, Sarah Haines
	11:45 - 12:00	11:45am - 12:00pm **Study on the Impact of Rainfall and Dew on the Corrosion Rate of Iron Artifacts Exposed Outdoors** Can Cui, Yunfang Huang, Huarong Xie, Shuichi Hokoi, Yonghui Li	11:45am - 12:00pm **Lesser-known Facts about Tree-centric Heat Mitigation** Yongling Zhao, Haiwei Li, Aytac Kubilay, Ronita Bardhan, Dominique Derome, Jan Carmeliet	11:45am - 12:00pm **Development of an Experimental Apparatus and Methodology to Evaluate the Thermal Performance of Wall Coatings Impregnated with Phase Change Materials** Maggie McClure, Calene Baylis, Christopher Baldwin, Cynthia A. Cruickshank	11:45am - 12:00pm **Lattice Boltzmann Method-based Large-eddy Simulation of Natural-convective Indoor Turbulent Flow** Mengtao Han, Hideki Kikumoto, Ryozo Ooka	11:45am - 12:00pm **A study of temporal changes in occupancy patterns of urban and rural area in residential buildings** Yuxin Lu, Xin Zhou, Shan Hu

CONFERENCE AGENDA day 2

Friday, 26 JULY 2024

	12:00 - 12:15	12:00pm - 12:15pm **Simulation-based assessment of thermal and humidity stress deterioration in clay sculptures from Baosheng Temple, Suzhou, China** Zhenhao Luo, Yishan Lu, Huarong Xie, Shuichi Hokoi, Yonghui Li	12:00pm - 12:15pm **Thermal resilience to extreme heat: preliminary study on thermal fragility curves** Kyujin Kim, Simona Bianchi, Thaleia Konstantinou, Mauro Overend, Jonathan Ciurlanti, Alessandra Luna-Navarro	12:00pm - 12:15pm **Building Energy Efficiency Enhancement through Solid-Solid Phase Change Materials in Glazing Systems** Hossein Arasteh, Wahid Maref, Hamed Saber	12:00pm - 12:15pm **Impact of stochastic and deterministic behaviour on natural ventilation: thermal comfort and indoor air quality performances in a preschool case study** Elena Crespino, Ludovica Maria Campagna, Francesco Carlucci, Francesco Martellotta, Francesco Fiorito	12:00pm - 12:15pm **Development of a scale model for experimental evaluation of thermal end effectors in buildings** Kipp Bradford, Forrest Meggers
	12:15 - 12:30	12:15am - 12:30am **The influence of tree height on the hygrothermal condition and salt weathering risk on an ancient city wall: A simulation study** Ting Zhang, Yueshan Li, Changchang Xia, Huarong Xie, Shuichi Hokoi, Yonghui Li	12:15am - 12:30am **Urban Heat Island Effect on Building Energy Consumption: ANN Method Application** Afshin Gharib Mombeni, Fitsum Tariku	12:15am - 12:30am **In Situ Experimental Evaluation of Coconut Oil as a Phase Change Material in the Cooling Season** Chanel N Smith, Calene Baylis, Christopher Baldwin, Cynthia A Cruickshank	12:15am - 12:30am **The effect of occupants' relative positions on thermal comfort and cross-infection risk with stratum ventilation** Chen Zhang, Peter V. Nielsen, Amalie S. Flou, Emanda Raudeberg, Jonas Spanggaard, Marie E. Ø. Jensen, William Jensen, Martin Frandsen	12:15am - 12:30am **Refined Estimation and Distribution Characteristics of Climate Comfort in Jiangnan Area, Southeast China** Bingqing Yu, Xingzhou Jia, Peng Zhang
	12:30 - 12:45	12:30am - 12:45am **The impact of traditional solid brick variability on the moisture risk assessment for current and future climate scenarios in London** Bingyu Xu, Valentina Marincioni, Anna Mavrogianni	12:30am - 12:45am **Integrating Hydrophilic Material in Constructed Wall for Evaporative Cooling in Desert Climate** Ming Yang, Hemant Diyalani, Xiang Zhang, Max Hakkarainen, William Braham, Dorit Aviv	12:30am - 12:45am **Sustainable Building Solutions: Enhancing Thermo-Acoustic Performance through Activated Hydrochar in Cement and Lime-Based Plasters** Carolina Santini, Claudia Fabiani, Marco Barbanera, Alessandro Cardarelli, Anna Laura Pisello	12:30am - 12:45am **Natural Ventilation Direction Control in Buildings with Fluid Diode Plates: A Field Measurement Study** Hong Hu, Hideki Kikumoto	12:30am - 12:45am **Experimental evaluation of MOx sensors for real-time indoor VOCs monitoring** Xin Guo, Bing Beverly Guo, Zhenlei Liu, Jialei Shen, Daniel Love, Peter J McKinney, Jianshun "Jensen" Zhang
	12:45 - 1:00	12:45am - 1:00pm **Assessing Moisture Safety Strategies in Renovations with Prefabricated Additional Insulation Elements: A Whole Building Heat, Air, and Moisture Simulation Approach** Targo Kalamees, Kristo Kalbe, Georg-Mihkel Kodi, Peep Pihelo	12:45am - 1:00pm **Development of a building envelope damage assessment tool for flood events based on hygrothermal modelling** Daniel de Cotret, Hélène Proulx, Marie-Amélie Boucher, Dominique Derome	12:45am - 1:00pm **Optimizing perception and efficiency: leadfree perovskite nanocrystals for enhanced passive daytime radiative cooling in urban environments** Francesco Marchini, Roberto Bondi, Claudia Fabiani, Loredana Latterini, Anna Laura Pisello	12:45am - 1:00pm **Impact of Entrance Air Exchange on Hygrothermal Environment of an Ancient Tomb** Changchang Xia, Ruibo Zhang, Zhenyi Kong, Huarong Xie, Shuichi Hokoi, Yonghui Li	12:45am - 1:00pm **Data mining for automatic identification and analysis of daily indoor environmental patterns in residential buildings** Arianna Latini, Elisa Di Giuseppe, Andrea Gianangeli, Gabriele Bernardini, Marco D'Orazio
p.m.	1:00 - 2:00	**Lunch** Location: Foyer				
		26th Early Aft_1: BUILDING PHYSICS AND MOISTURE Location: **Room 1** Chair: Emishaw Iffa	**26th Early Aft_2: URBAN CLIMATE** Location: **Room 2** Chair: Ilaria Pigliautile	**26th Early Aft_3: MATERIALS** Location: **Room 3** Chair: Jianshun Zhang	**26th Early Aft_4: LIGHTING** Location: **Room 4** Chair: Miljana Horvat	**26th Early Aft_5: BUILDING SYSTEMS AND HVAC** Location: **Room 5** Chair: Aminhossein Jahanbin
	2:00 - 2:15	2:00pm - 2:15pm **Understanding Liquid Water Transport in Wood: Insights from Growth Rings and Cellular Scales** Tom Soumassiere, Frédéric Voisard, Robert Fischer, David Mannes, Dominique Derome	2:00pm - 2:15pm **How much computational complexity is necessary to model relevant aspects in microclimate urban physics?** Sina Rahimi, Umberto Berardi, Patrick Kastner	2:00pm - 2:15pm **Experimental and numerical analysis of novel insulation materials for the building wall** Cristina Piselli, Fabio Sciurpi, Claudia Fabiani, Cristina Carletti, Anna Laura Pisello	2:00pm - 2:15pm **Quantifying Co-Benefits of Building Automation: Effects of Shading Control on Visual Comfort, Well-being, and Productivity in Office Buildings** Federico Garzia, Stijn Verbeke, Cristian Pozza, Amaryllis Audenaert	2:00pm - 2:15pm **Importance of demand side unsteadiness on opportunity for space heating energy saving** Andrew Morgan Williams, John Brammer, Daniel Innerdale, Joseph Amoako-Attah, Michael Ashcroft, Scott Caldwell, Neale Davies, David Kiddell, Monower Sadique

CONFERENCE AGENDA day 2

Friday, 26 JULY 2024

2:15 - 2:30	2:15pm - 2:30pm **A Conceptual Approach for Developing Guidelines to Prevent Drying Cracks in Mass Timber** Samuel V. Glass, Natalia Farkas, Samuel L. Zelinka, Graham Finch, Nate Helbach	2:15pm - 2:30pm **A block scale airflow zonal model for urban microclimate modelling** Flavia Barone, Lucie Merlier, Frédéric Kuznik, Mathias Bouqurel	2:15pm - 2:30pm **A comparative analysis of hemp-lime assemblies for low-carbon building construction** Valentina Marincioni, Virginia Gori, Bingyu Xu, Tom Davies, Max Dewdney	2:15pm - 2:30pm **Visual Comfort Control Strategy for an Advanced Fenestration in an Office Space** Iheb Ben Sassi, Andreas Athienitis, Mohamed Ouf	2:15pm - 2:30pm **Towards Digital Twin - Holistic Planning of Thermal Renovations with Heat Pumps in Multi-Apartment Buildings** Fabian Ochs, Mara Magni, Georgios Dermentzis, William Monteleone, Elisa Venturi
2:30 - 2:45	2:30pm - 2:45pm **Moisture Excess in UK Dwellings: Preliminary Analysis** Jalal Ahmed, Hector Altamirano-Medina, David Allinson, Ian Mawditt	2:30pm - 2:45pm **New indices to assess the cooling potential by trees in an urban environment** Clément Nevers, Adrien Rodriguez, Jan Carmeliet, Aytaç Kubilay, Dominique Derome	2:30pm - 2:45pm **Energy performance assessment of an innovative doubleskin façade with Air-PCM heat exchanger** Ginevra Li Castri, Manuela Baracani, Fabio Favoino, Valentina Serra, Marco Perino	2:30pm - 2:45pm **Design of a Building Automation system for window shading: the case study of an office building in Madrid** Francesco Iannone, Natalia Franco	2:30pm - 2:45pm **Field Survey on Temperature/Humidity Environment and Heat-Source Energy Consumption in an Art Museum with Intermittent Air Conditioning Operation** Chiemi Iba, Etsuko Mizutani, Junko Akiyama, Kazuko Yui, Kotomi Tanaka
2:45 - 3:00	2:45pm - 3:00pm **Impact of microstructure and mycelium proliferation on water uptake and moisture transfer along the longitudinal direction of wood** Hiroaki Saito, Makiko Nakajima, Daisuke Ogura, Takuro Mori, Sakae Horisawa	2:45pm - 3:00pm **Enhanced wind velocity and pressure measurement around buildings using physics-informedneural networks: Acase study with a two-dimensional urbanstreet canyon** Hideki Kikumoto, YichenWang, Bingchao Zhang,Hongyuan Jia	2:45pm - 3:00pm **Double-skin façade with air-PCM latent heat exchanger: first results from experimental campaign** Lorenzo Rapone, Ginevra Li Castri, Marco Lavilletta, Fabio Favoino, Valentina Serra, Marco Perino	2:45pm - 3:00pm **Spectral dynamics and spatial variations in indoor daylight quality: A case study** Tobias Kristiansen, Thomas Thiis, Ingunn Burud, Arnkell Jonas Petersen	2:45pm - 3:00pm **Analysis of Energy-Saving Performance of Office Building Using Water-Source Air Conditioning and Hot-Water Supply System** Haruka Kawabata, Chiemi Iba, Tatsunori Maeda, Takuya Harase
3:00 - 3:15	3:00pm - 3:15pm **Development of a moisture risk index for wood-frame walls** Samuel V. Glass, Charles R. Boardman, Natalia Farkas, Samuel L. Zelinka, Borjen Yeh, Kamal Neupane	3:00pm - 3:15pm **Multiphysics modelling of greenhouse microclimate through SINDy approach** Hanyu Zhou, Yifan Ding, Chang'an Liu, Hongyi Wang	3:00pm - 3:15pm **Investigation of Phase Change Material Impregnation in a Highly Porous Structure** Rossella Cottone, Miroslav Čekon, Christ Glorieux, Stefano Fantucci, Jakub Čurpek, Richard Slávik, Monika Rychtáriková	3:00pm - 3:15pm **The Contribution of Lighting Control Systems to Improve the Energy Performance of a Swedish School Case Study** Flavia Vespasiano, Laura Pompei, Laura Blaso, Stefano Grignaffini, Niko Gentile, Fabio Bisegna	3:00pm - 3:15pm **A Method to Increase the Efficiency of Ground Water Heat Pump in Japanese Traditional Residential Community, as a Part of Net-Zero Energy Community Proposal** Pei Liu, Chiemi Iba
3:15 - 3:30	3:15pm - 3:30pm **Analyzing the use of PDMS-brush coatings for controlling microbial growth in damp indoor environments** Sumaiya Hassan, Mehdi Sadeghi, Kevin Golovin, Sarah Haines	3:15pm - 3:30pm **Wildfire Resilient Building design guidelines for Canadian locations** Abhishek Gaur, Henry Lu, Noureddine Benichou	3:15pm - 3:30pm **Waste-based materials for improved thermal and acoustic performance in buildings** Stefania Liuzzi, Francesco Martellotta, Chiara Rubino	3:15pm - 3:30pm **Daylight assessment and implications on the overall energy need in an office building: a case study** Domenico Iatauro, Michele Zinzi	3:15pm - 3:30pm **Thermal and energy performances of a radiant floor system incorporating phase change materials** Filipe Rebelo, António Figueiredo, Ricardo M.S.F. Almeida, Romeu Vicente, Victor M. Ferreira
3:30 - 3:45	3:30pm - 3:45pm **Measurement of through-assembly air leakage and its impact on moisture performance of wood-frame walls** Natalia Farkas, Charles R. Boardman, Samuel V. Glass, Samuel L. Zelinka	3:30pm - 3:45pm **A Review of Urban Shade Infrastructures in Developing Countries with Humid and Hot Climate: Status, Barriers, and Prospects** Liyue Jin, Bao-jie He	3:30pm - 3:45pm **One-Step Hydrothermal Synthesis and Performance Evaluation of Vanadium Dioxide Structures for Thermochromic Glass Applications** Khaled khaled, Umberto Berardi, Marcel Schlaf, Dmitriy Dmitriy	3:30pm - 3:45pm **Early-design daylight performance evaluation of a housing block in Tirana, Albania** Iva Bufi, Sokol Dervishi, Ina Dervishi	3:30pm - 3:45pm **Geothermal Heat Pumps in Cold Regions: Assessing Performance and Weather Data Dependency** Pooya Farzanehkhameneh, Miroslava Kavgic

CONFERENCE AGENDA day 2

Friday, 26 JULY 2024

	3:45 - 4:00	3:45pm - 4:00pm **CLT Walls: Role of Vapour Barriers and Smart Vapour Retarders for Enhanced Durability** Martin Morelli, Nickolaj Feldt Jensen, Tessa Kvist Hansen	3:45pm - 4:00pm **Forcasting the impacts of climate change on cooling energy demand patterns of existing tropical buildings** S.V.I.R.V. Serasinghe, M. A. Wijewardane, I. D. Nissanka	3:45pm - 4:00pm **Application of thermochromic and self-cleaning materials in buildings: A Bibliometric Analysis** Ana Carolina Hidalgo-Araujo, Rafael Salomão, Kelen Dornelles	3:45pm - 4:00pm **Simulation of snow on glass roofs and its effect on light attenuation** Thomas Thiis, Iver Frimannslund, Tobias Kristiansen, Arnkell Petersen	3:45pm - 4:00pm **Cooling Potential of Ventilating Fans in Residential Buildings in Tropics** Lup Wai Chew, Justin Zuo Ken Chia, Poh Seng Lee
p.m.	4:00 - 4:30	**Coffee Break** Location: Foyer				
	4:30 - 6:30	**26th Late Aft_1: BUILDING PHYSICS AND MOISTURE** Location: **Room 1** Chair: Mark Gorgolewski	**26th Late Aft_2: ENERGY EFFICIENCY AND CODES** Location: **Room 2** Chair: Piero Bevilacqua	**26th Late Aft_3: MATERIALS** Location: **Room 3** Chair: Frédéric Kuznik	**26th Late Aft_4: LIGHTING** Location: **Room 4** Chair: Andrea Gasparella	**26th Late Aft_5: BUILDING SYSTEMS AND HVAC** Location: **Room 5** Chair: Anatolijs Borodinecs
		4:30pm - 4:45pm **How the isolation of mycelium compares to mineral wool and hemp wool?** Claudiane Ouellet-Plamondon, Valérie Grenon, Wahid Maref	4:30pm - 4:45pm **Roofs passive cooling performance through air permeability of tiles: development of a standardized laboratory assessment method** Elisa Di Giuseppe, Andrea Gianangeli, Benedetta Ferrari, Arianna Latini, Marco D'Orazio	4:30pm - 4:45pm **Water absorption properties of lime-based thermal insulation and renovation mortars** Aime Ruus, Kai-Liis Oja, Karin Mihkelsoo, Madis Mihkelsoo, Ernst Tungel, Mihkel Kiviste	4:30pm - 4:45pm **Distributed vs single-point measurements in field studies on visual comfort** Federica Morandi, Ilaria Pittana, Francesca Cappelletti, Andrea Gasparella, Athanasios Tzempelikos	4:30pm - 4:45pm **Enhancing Energy Efficiency and Flexibility in Educational Buildings through a Deep Reinforcement Learning-Based Controller for Rooftop Units** Silvio Brandi, Andrea Pizza, Giacomo Buscemi, Giuseppe Razzano, Alfonso Capozzoli
	4:45 - 5:00	4:45pm - 5:00pm **Hygrothermal Assessment of Cob Walls in Cold Conditions** Aguerata Kabore, Claudiane Ouellet-Plamondon	4:45pm - 5:00pm **Dynamic modelling of interactions between building heating events** Daniel Thomas Innerdale, Andrew Morgan Williams, John Brammer, Michael Ashcroft, Scott Caldwell, David Kiddell, Monower Sadique, Joseph Amoako-Attah, Neale Davies	4:45pm - 5:00pm **Performance-based Characterization of Spectral Transmittance and Thermal Response of PCM Glass Block Façade System** Jakub Čurpek, Miroslav Čekon, Richard Slávik	4:45pm - 5:00pm **Daylight and energy performance relationship of classroom and office spaces : Comparative Study of Istanbul Commerce University Küçükyalı Campus Building.** Nur Sümeyye Yalçın Koçak, İbrahim Agah Taştemir, Erdem Köymen, Enes Yaşa	4:45pm - 5:00pm **Physics-based inverse model anomaly detection in light commercial buildings' AHU systems** Milad Babadi Soultanzadeh, Mazdak Nik-Bakht, Mohamed Ouf, Pierre Paquette, Steve Lupien
	5:00 - 5:15	5:00pm - 5:15pm **Advancing Heat Transfer Measurement: Integrating Humidity Variation and Mass Diffusion in Hygroscopic Construction Materials** Maya Hajj Obeid, David Cloet, Mickael Pailha, Monika Woloszyn	5:00pm - 5:15pm **Enhancing Commercial Building Energy Efficiency through Automated Air Sealing Technology** Emishaw Iffa, Niraj Kunwar, Mikael Salonvaara, Diana Hun	5:00pm - 5:15pm **Preliminary evaluation on the visual and thermal performance of novel low-cost ink-jet printed electrochromic glazing** Alessandra Luna Navarro, Robert Verbeek, Zara Huijbregts, Eleonora Brembilla, Thaleia Konstantinou, Martin Tenpierik	5:00pm - 5:15pm **Evaluation of solar irradiance models for hourly irradiance estimation on vertical surfaces in Vancouver, Canada: Comparison of 42 models** Zelalem Abebe, Fitsum Tariku, Phalguni Mukhopadhyaya, Thomas M. Froese	5:00pm - 5:15pm **In-Situ Evaluation of a Fuel-Switching Heating System in Edmonton, Canada: Lessons Learned** Alexander Jordan, Yuxiang Chen
	5:15 - 5:30	5:15pm - 5:30pm **Novel MIL-100(Fe) paper membrane for autonomous indoor humidity control** Dong Ding, Oliver Søndergaard Rasmussen, Menghao Qin	5:15pm - 5:30pm **Accelerating NZEB Design Optimization through LLM-based Standardization and Compliance Checking** Hongshan Guo, James Coleman	5:15pm - 5:30pm **Inherent Passive Radiative Cooling Properties of Cementitious Materials Across Different Climates** Alicia Elena Torres, Ridwan O. Agbaoye, Laura Carlosena, Guido Goracci, Carlos Lezaun, Jorge S. Dolado, Miguel Beruete	5:15pm - 5:30pm **Visual comfort prediction model of daylit office space and its application in architectural design** Xi Huang, Dagang Qu, Cheng Sun, Shi Sun	5:15pm - 5:30pm **Environmental adjustment method using humidity controlling outside air processor of cultural property repository under natural room temperature** Shuichi Kurose, Daisuke Ogura, Hiroyuki Kitahara

CONFERENCE AGENDA day 2

Friday, 26 JULY 2024

5:30 - 5:45	5:30pm - 5:45pm **Metal-organic Frameworks (MOFs) as advanced sorbents for indoor moisture control - a comparative study** Dong Ding, Menghao Qin	5:30pm - 5:45pm **Assessing thermal resilience in Canadian housing: a comparative study of three housing archetypes across diverse climate zones** Tareq Abuimara, Ahmed Abdeen, Kheira A. Tabet Aoul	5:30pm - 5:45pm **Exploring Recycled Plastic Aggregates in Hemp Concrete** Lara Aldaou	5:30pm - 5:45pm **Lighting Analyses of a University Classroom Learning Space** Terri Peters, Cassidy Ho	5:30pm - 5:45pm **Validation of the MPC-based optimal control method for TABS by unsteady CFD analysis** Minghao Huang, Yasuyuki Shiraishi, Satoshi Hirakawa, Jun Maruyama
5:45 - 6:00	5:45pm - 6:00pm **Hygrothermal assessment of natural insulation materials employed for internal use in historic masonry** Kadri Leiten, Matthias Hints, Karl-Miikael Mirka	5:45pm - 6:00pm **The influence of energy price on indoor thermal comfort and occupant behaviour: a systematic literature review and the Danish case study** Camilla Massucci, Jørn Toftum, Pawel Wargocki, Rune Korsholm Andersen	5:45pm - 6:00pm **Enhancing Performance of Internally Insulated Solid Masonry Wall: Use of moisture adaptive membranes** Ruut H. Peuhkuri, Nickolaj Feldt Jensen, Ernst Jan de Place Hansen, Panagiota Pagoni, Eva B. Møller	5:45pm - 6:00pm **Influence of sky view factor and façade color on spectral daylight properties at the façade in urban canyon** Mitja Košir, Jaka Potočnik, Nataša Šprah	5:45pm - 6:00pm **Assessment of Negative Pressure Environment using Convertible Air Handling Unit in Full-Scale Chamber** Heeun Cho, Seongmin Jo, Gihoon Kim, Yelim Jo, Minki Sung
6:00 - 6:15	6:00pm - 6:15pm **Comparison of linear regression, regularisation, and partial least squares regression in their ability to predict and rank moisture severity of climate years** Saranya Krishnasami, Maurice Defo, Michael Lacasses	6:00pm - 6:15pm **Blockchain applications for building and smart grid system: Innovative success energy Framework from UE Case Studies** Cosimo Damiano Carpentiere, Carnevale Riccardo, Berardi Umberto, Di Sciascio Eugenio, Messeni Petruzzelli Antonio	6:00pm - 6:15pm **Retrofitting facades of modern/industrial era from inside – Hygrothermal performance** Ruut Peuhkuri, Nickolaj Feldt Jensen, Ernst Jan de Place Hansen, Panagiota Pagoni, Eva B. Møller	6:00pm - 6:15pm **Sustainable materials for highly insulated window frames: thermal performance and finite elements modelling.** Alessandro Cannavale, Stefania Liuzzi, Chiara Rubino, Vincenzo De Carlo, Ubaldo Ayr, Francesco Martellotta	6:00pm - 6:15pm **Comprehensive evaluation of line-type coanda air-conditioning systems by CFD analysis** Kenta Tsuchi, Yasuyuki Shiraishi, Daishi Inoue, Hiroaki Tanaka
6:15 - 6:30	6:15pm - 6:30pm **Toward stochastic full-scale pore network generation for porous building materials** Chengnan Shi, Jeroen Soete, Hans Janssen		6:15pm - 6:30pm **Modelling hygrothermal performance of wood assemblies exposed to Serpula Lacrymans** Camille Roy, Dominique Derome, Caroline Frenette		6:15pm - 6:30pm **Enhancing energy-efficient thermal control in buildings with a hybrid M-cycle/vapor compression refrigeration system** Alberto Muscio, Michele Cossu, Roberto Sedoni, Nicolò Morselli, Marco Puglia, Giulio Allesina, Simone Pedrazzi, Diego Angeli
7:00 - 9:00	**Gala Dinner** Location: Dominion Ballroom, Sheraton Centre Toronto Hotel				

CONFERENCE AGENDA day 3

Saturday, 27 JULY 2024

a.m.	7:30 - 8:30	**Registration** Location: Foyer					
	8:30 - 9:30	**Keynote 4: Ursula Eicker** **Digital twins for urban decarbonization strategies** Location: **Plenary Room**					
	9:30 - 10:30	**Keynote 5: Raymond Panneton** **Conventional and unconventional porous materials for building acoustics** Location: **Plenary Room**					
	10:30 - 11:00	**Coffee Break** Location: Foyer					
		27th Morning_1: **THERMAL BRIDGES AND CONDENSATION** Location: **Room 1** Chair: Wahid Maref	**27th Morning_2:** **URBAN MODELLING** Location: **Room 2** Chair: Zahra Jandaghian	**27th Morning_3:** **BUILDING TECHNOLOGY** Location: **Room 3** Chair: Alessandra Luna Navarro	**27th Morning_4:** **VENTILATION** Location: **Room 4** Chair: Andrea Gasparella	**27th Morning_5:** **BUILDING SYSTEMS AND HVAC** Location: **Room 5** Chair: Giovanni Pernigotto	**27th Morning_5:** **RENEWABLE ENERGY TECHNOLOGIES** Location: **Room 6** Chair: Alan S. Fung
	11:00 - 11:15	11:00am - 11:15am **Evaluating the Thermal and Hygrothermal Efficacy of Wood Fiber Insulation in Diverse Climates** Emishaw Iffa, Mikael Salonvaara, Mengjia Tang, Andre Desjarlais, Rui Zhang	11:00am - 11:15am **UECC: A novel simulation platform for evaluating city-scale building energy use and carbon emissions** Xiaoyu Wang, Xing Shi, Shuai Tian, Chao Wang, Yueyun Geng	11:00am - 11:15am **Assessing moisture content using infrared thermography – Preliminary results** Letícia Dafico, Eva Barreira, Diana Neves, Romeu Vicente, Ricardo Almeida	11:00am - 11:15am **Research about the Coupling Effect of Solar Chimney Integrated Tunnel Wind in Atrium Space: A Case Study of Creative Center in Northwest of China** Xincheng Ye, Qi Zhang, Linxue Li, William W Braham	11:00am - 11:15am **Model predictive control of building integrated photovoltaic/ thermal-energy storage system for energy flexibility** Jean-Christophe Pelletier-De Koninck, Andreas Athienitis, Hervé Frank Nouanegue	11:00am - 11:15am **Assessing the Viability of Integrating Solar PV Systems on Post-World War II Public Housing** Mohammad Hossein Fallahi, Sahar Movafagh, Hassan Bazazzadeh, Umberto Berardi, Adam Nadolny
	11:15 - 11:30	11:15am - 11:30am **Hygrothermal Considerations Archaic Wall Assemblies** Ken Maschke, Adithya Purushothaman Sivanandam, Nicole Peterson	11:15am - 11:30am **On the influence of input variables on the building energy modelling process: a sensitivity analysis.** Francesco Carlucci, Francesco Fiorito	11:15am - 11:30am **Increasing the building envelope resilience to moisture and mould growth** Natalia Andrea Saavedra Toro, Arianna Brambilla, Aysu Kuru, Eugenia Gasparri, Umberto Berardi	11:15am - 11:30am **Image Upsampling of Low Resolution Turbulent CFD Domains with U-Net** Christoph Waibel, Rebekah Vecchiarelli, Ayca Duran, Arno Schlueter	11:15am - 11:30am **Low-temperature radiant cooling and its effect on the local indoor thermal environment** Thais Keravec-Balbot, Eric Teitelbaum, Forrest Meggers, Dolaana Khovalyg	11:15am - 11:30am **Enhancing BIPV Modeling Efficiency: A Co-Simulation Framework** Abdella Alzade, Dirk Saelens
	11:30 - 11:45	11:30am - 11:45am **Uncertainties in real-life Heat Loss Coefficient estimation: A case study** Katia Ritosa, Dirk Saelens, Staf Roels	11:30am - 11:45am **Modeling the Effects of Panel Interfaces on Air-tightness and Thermal Performance of an Integrated Whole-Building Energy Efficiency Retrofit Assembly** Shayan Mirzabeigi, Rui Zhang, Bess Krietemeyer, Jianshun "Jensen" Zhang	11:30am - 11:45am **Energy-Saving Optimization of External Wall for Elderly Care Buildings: A case from China** Xingshuo He, Lihua Zhang, Gang Liu	11:30am - 11:45am **From Open Air to Air-Tight: Analyzing the Ventilation Overhaul in Hong Kong's Wet Markets and Its Implications** Hongshan Guo, Ying Zhou	11:30am - 11:45am **Modular radiant floor heating and its effect on local thermal comfort** Diego Houtart, Han-Yun Jhang, Dusan Licina, Dolaana Khovalyg	11:30am - 11:45am **Outdoor Performance of a Photovoltaic Façade System Enhanced with Microencapsulated Phase Change Material Embedded in a Honeycomb Structure** Miroslav Čekon, Jakub Čurpek, Richard Slavík, Ladislav Kómar, Peter Matiašovský
	11:45 - 12:00	11:45am - 12:00am **Thermal bridging requirements in the NECB context: specifying wall clear-field transmittances to compensate for major thermal bridges** Andrés Gallardo, Iain Macdonald	11:45am - 12:00am **Comparison of performance modelling approaches under different integrations of multi-dimensional data for a UK school building** Jingxuan Yang, Esfandiar Burman, Dejan Mumovic	11:45am - 12:00am **A method of drying historic foundation walls using the dual-purpose drainage method** Robert Wójcik, Piotr Kosiński	11:45am - 12:00am **Simulations Study on Airflow and Thermal Comfort with Computational Fluid Dynamics for Large Exhibition Spaces** Jia-Wei Zheng, Ting-Syuan Wu, Yu-Lieh Wu	11:45am - 12:00am **Adopting a strategy to improve indoor conditions and reduce energy consumption in localized ventilation systems** Roya Rateghi, Seyed Alireza Zolfaghari, Mahdi Afzalian, Seyed Mohammad Hooshmand, Hui Zhang, Andreas Wagner	11:45am - 12:00am **Use of Computational Modeling to Optimize the Layout of Outdoor A/C Units in Reentrants of Tropical High-rise Residential Buildings** V. M. Harithkhan, M. M. I. D. Manthilake, I. D. Nissanka

CONFERENCE AGENDA day 3

Saturday, 27 JULY 2024

12:00 - 12:15	12:00pm - 12:15am **Networked Sensors for In-situ Real-time Monitoring of the Local Hygrothermal Conditions and Heat fluxes across a Building Enclosure Before and After a Building Retrofit** Shayan Mirzabeigi, Sameeraa Soltanian-Zadeh, Brian Carter, Bess Krietemeyer, Jianshun "Jensen" Zhang	12:00pm - 12:15am **Data-driven short-term forecasting of residential building energy demand: a case study** Marcin Zygmunt, Dariusz Gawin	12:00pm - 12:15am **Reuse of bricks: Analysis of the environmental impact and financial costs** Katrien Devos, Lionel Devlieger, Marijke Steeman	12:00pm - 12:15am **CFD analysis of the impact of building shape on natural ventilation effectiveness in high-rise buildings.** Roberto Stasi, Francesco Ruggiero, Umberto Berardi	12:00pm - 12:15am **Solar Air collectors in cold climates to achieve energy efficiency in residential buildings** Piero Bevilacqua, Roberto Bruno, Daniela Cirone, Antonio Cristaudo, Magdalena Nemś, Roberto Musmanno	12:00pm - 12:15am **Space Heating Demand Prediction of Residential Houses using High-Frequency but Imprecise Data from Smart Thermostat with AI/ML Technique** Maaz Rashid, Alan S. Fung
12:15 - 12:30	12:15am - 12:30am **Assessing the accuracy of EN ISO 13370 simplified method for edge insulation: a comparative analysis with steady-state and dynamic simulation models** Siim Lomp, Targo Kalamees, Jaanus Hallik	12:15am - 12:30am **Effect of Wind on the Thermal Performance of a Building Envelope in Cold Climate** Ahmed Raza Jafri, Martin Agelin-chaab, Hoira Hangan, Eric Villeneuve	12:15am - 12:30am **Experimental study on the warping of Fusuma and tear of paper at different temperatures and humidities on its two sides** Shiori Izukura, Nobumitsu Takatori, Daisuke Ogura, Okamura Tomoaki, Takabayashi Hiromi, Kida Keiko	12:15am - 12:30am **A parametric computational fluid dynamics approach for enhancing indoor ventilation efficiency based on optimizing architectural and landscape design with trees** Shengnan Niu, Congchao Ma, Lufang Chen, Annan Wang, Dan Song, Song Zhang, Xing Jin	12:15am - 12:30am **Performance consideration of smoke control system designed based on pressure difference of high-rise building during fires** Yongjun Choi, Sungwoong Yang, Ji Yong Choi, Sumin Kim	11:15am - 11:30am **Thermal model of a BIPV experimental structure through CFD** Fatma Abdul Hameed
12:30 - 12:45	12:30am - 12:45am **In-Situ Testing of Commercial Steel Building Retrofits** Thomas Dalkowski, Christopher Baldwin, Cynthia A. Cruickshank	12:30am - 12:45am **Do teleworkers buy bigger homes and acquire new cars? A survey-based analysis of teleworkers' behaviors in Canada** Farzam Sepanta, William O'Brien	12:30am - 12:45am **Hygrothermal peformance of wood shavings as thermal insulation of exterior walls in cold climate** Petteri Huttunen, Juha Vinha	12:30am - 12:45am **The impact of ventilation rate on mitigating the overheating risk in light steel framing and hollow brick masonry buildings** António Figueiredo, Ricardo M.S.F. Almeida, Romeu Vicente, Victor M. Ferreira	12:30am - 12:45am **Performance Analysis of the Collective Heating System in Three Multifamily Buildings Using in Situ Monitoring** Stijn Van de Putte, Niels Maenhout, Marijke Steeman, Arnold Janssens	12:30am - 12:45am **Study on the thermal performances of PV-integrated vacuum glazing (PV-VG) insulated facades** Hao Zhou, Hongxing Yang, Lin Lu
12:45 - 1:00	12:45am - 1:00pm **3D Heat Transfer Analysis in Architectural Modeling: A Case Study with OpenFOAM** Maryam Almaian, Patrick Kastner	12:45am - 1:00pm **The active role of buildings dynamic simulation in energy transition with hourly climate data in situ measurements** Valeria Selicati, Donato Gallo, Carmelina Cosmi, Rosa Caggiano, Nicola Cardinale, Antonello Pagliuca	12:45am - 1:00pm **Mapping Advanced Facades** Vito Lamberti, David Lehrer	12:45am - 1:00pm **Applying physics-informed neural networks to predict unsteady indoor airflow development** Chenghao Wei, Ryozo Ooka	12:45am - 1:00pm **Personal Environmental control system based on a small and portable heat pump** Vincenzo Gentile, Marco Perino	12:45am - 1:00pm **Leveraging Multimodal Large Language Models for Enhanced Learning and Application in Building Energy Modeling** Rania Labib
p.m. 1:00 - 2:00	**Lunch** Location: Foyer					
	27th Early Aft_1: SUSTAINABILITY Location: **Room 1** Chair: Ursula Eicker	**227th Early Aft_2: URBAN PHYSICS** Location: **Room 2** Chair: Jan Carmeliet	**27th Morning_3: BUILDING TECHNOLOGY** Location: **Room 3** Chair: Valentina Serra	**27th Early Aft_4: ACOUSTICS** Location: **Room 4** Chair: Raymond Panneton	**27th Early Aft_5: BUILDING SYSTEMS AND HVAC** Location: **Room 5** Chair: Marco Perino	**27th Early Aft_6: RENEWABLE ENERGY TECHNOLOGIES** Location: **Room 6** Chair: Ryozo Ooka
2:00 - 2:15	2:00pm - 2:15pm **Life Cycle Assessment of Wooden Constructions with Bio-Based Insulation** Anke Blommaert, Nathan Vandenbossche, Marijke Steeman	2:00pm - 2:15pm **A method of obtaining the hourly occupant density from big data** Jiawen Ren, Xing Shi, Xin Zhou	2:00pm - 2:15pm **From Tradition to Innovation: Analyzing Clay Bricks in Southwest of Tunisia the El Djerid Area for Building Material Advancements** Najah Majouri, Mohamed El mankibi, Jalila Sghaier	2:00pm - 2:15pm **A Critical Review on AI-driven Physiological Data Analysis in Multisensory Environments: Initiating the Journey with Acoustic Experience and Machine Learning** Yuqing Du, Arianna Brambilla, Anastasia Globa	2:00pm - 2:15pm **Multi-criteria optimisation of the domestic hot water system through response surface method with an emphasis on the role of control strategy and user behaviour** Aminhossein Jahanbin, Roberto Stasi, Umberto Berardi	2:00pm - 2:15pm **Evaluation of solar energy generation, consumption, and banked rates in a multi-purpose development** Timothy O. Adekunle

CONFERENCE AGENDA day 3

Saturday, 27 JULY 2024

2:15 - 2:30	2:15pm - 2:30pm **A Comprehensive Analysis of Vernacular and Modern Houses in Quito, Ecuador** Stefanie Marie Gocht, Anica Jasmin Mayer, Nadine Engel	2:15pm - 2:30pm **Automated model generation for digital twins** Maximilian Bühler, Bednar Thomas	2:15pm - 2:30pm **Optimizing Protection Strategies for Grotto Temples: A Hygrothermal Analysis of Shading Elements in Heritage Conservation** Ruobin Wu, Chenpeng Liu, Huarong Xie, Yongqiang Yue, Shuichi Hokoi, Yonghui Li	2:15pm - 2:30pm **Metamaterials incoporation into HVAC systems for noise reduction** Marco Lizotte, Jean-Bernard Piaud, Raymond Panneton, Tenon Charly Kone, Vincent François, Jean-Christophe Cuillière	2:15pm - 2:30pm **Developing an optimal hydrogen storage system for a small laboratory in Toronto, Canada: Leveraging TRANSYS simulation and FORTRAN programming with metal hydride tanks** Leila Abdolmaleki, Umberto Berardi	2:15pm - 2:30pm **A novel approach combining multiple model chains to estimate solar energy potential** Mattia Manni, Alessandro Nocente, Gabriele Lobaccaro
2:30 - 2:45	2:30pm - 2:45pm **Sustainable renovation scenarios towards a flexible building use of a university campus** Hannelore Scheipers, Kevin Vanlerberghe, Eline Himpe, Raf De Preter, Martijn Vyncke, Arnold Janssens	2:30pm - 2:45pm **A Surrogate Urban Building Energy Model for Predicting Cooling Energy Consumption in a Hot and Arid Climate** Omar Ahmed, Liangzhu {Leon} Wang, Ibrahim Galal Hassan	2:30pm - 2:45pm **Heritage preservation in museums – first steps towards an optimization toolbox** Marcin Zygmunt, Staf Roels, Geert Bauwens	2:30pm - 2:45pm **An Acoustic Metamaterial-based Psychoacoustic Analysis for Creating a Pleasant Environment in Urban Areas** Xiang Fang, Prateek Mittal, Tin Oberman, Francesco Aletta, Sriram Subramanian, Jian Kang	2:30pm - 2:45pm **Sorption vs. Separation –Prototype Comparison of Two Approaches to Façade-Integrated Dehumidification** Peteris Lazovskis, Jack Alvarenga, Eric Teitelbaum, Coleman Merchant, Sean Rucewicz, Pamela Cabrera, Jaya Manideep Rebbagondla, Leslie Norford, Joanna Aizenberg, Jonathan Grinham, Forrest Meggers	2:30pm - 2:45pm **Impact of BIPV on outdoor thermal comfort: Comparative study of four urban block typologies** Ayca Duran, Rino Sogno, Dominic Buettiker, Loukas Mettas, Kaspar Stengele, Christoph Waibel, Arno Schlueter
2:45 - 3:00	2:45pm - 3:00pm **Renovate or replace - What is the optimal decision for a typical building considering cumulative CO_2 emissions?** Cristina Dominguez, Dietmar Gross, Roland Hischier, Efstathios Kakkos, Georgios Mavromatidis, Kristina Orehounig	2:45pm - 3:00pm **Aerial thermography for district-scale energy assessment and planning. A case study in Turin.** Sebastiano Anselmo, Maria Ferrara, Stefano Paolo Corgnati, Piero Boccardo	2:45pm - 3:00pm **Hygrothermal Performance of a Masonry Overcladding Prefabricated Exterior Energy Retrofit in Ottawa** Brock Paul Conley, Mark Carver	2:45pm - 3:00pm **Students' cognitive performance in different acoustic conditions at different educational stages** Lisa Battagliarin, Ilaria Pittana, Gaia Spicciarelli, Flavia Gheller, Barbara Arfè, Antonino Di Bella, Francesca Cappelletti, Piercarlo Romagnoni	2:45pm - 3:00pm **Thermal performance of radiantly cooled rammed earth** Dishanka Kannan, Ningxu Luo, Yujia Cui, Xiang Zhang, Max Hakkarainen, William Braham, Dorit Aviv	2:45pm - 3:00pm **A decade of energy consumption in a single-family house: The impact of microgeneration** Ana Silva, Maria Paula Mendes, Pedro Lima Gaspar, Christoph Reinhart
3:00 - 3:15	3:00pm - 3:15pm **Assessing environmental sustainability in large-scale food retail trade stores. The refrigerated cabinets case study.** Simone Forastiere, Cristina Piselli, Carla Balocco, Fabio Sciurpi	3:00pm - 3:15pm **Green Transition: are Historical City Centres Residents Excluded? The Case of Venezia** Lorenzo Teso, Linda Zardo, Angelo Zarrella	3:00pm - 3:15pm **A Hygrothermal Modelling Case Study of a Prefabricated Exterior Energy Retrofit** Brock Paul Conley, Mark Carver	3:00pm - 3:15pm **The Role of Façades in the Composition of Urban Soundscapes** Alvaro Balderrama, Alessandra Luna-Navarro, Jian Kang	3:00pm - 3:15pm **A feature selection approach for unsupervised steady-state chiller fault detection** Yashar Bezyan, Fuzhan Nasiri, Mazdak Nik-Bakht	3:00pm - 3:15pm **Integration of PV/T System for Achieving Energy-Efficient Buildings: A Case Study of Residential Buildings at High Latitudes** Alireza Norouziasas, Gabriele Lobaccaro, Mohamed Hamdy
3:15 - 3:30	3:15pm - 3:30pm **Sustainability in temporary buildings: a review** XiaoTong Feng, Bao-jie He	3:15pm - 3:30pm **Analysis of the potential of urban buildings to accommodate roof photovoltaic power generation: a case study in Yangpu District, Shanghai** Shuai Tian, Xinkai Zhang, Xing Shi, Xin Zhou	3:15pm - 3:30pm **Energy Consumption, Indoor Environmental Quality, and Resident Behavior in Energy-Retrofitted Buildings** Santeri Schroderus, Elmeri Sorsa, Pentti Kuurola, Virpi Leivo, Filip Fedorik, Ulla Haverinen-Shaughnessy	3:15pm - 3:30pm **From Nature to Noise Reduction: A Study of CNC Milling Fabrication with Cork and Mossbased Materials** Xinrui Cai, Sahda Salsabila, Tin Oberman, Brenda Parker, Marcos Cruz, Vijay Pawar	3:15pm - 3:30pm **Research on Optimised Control Strategy of Ice Storage Cooling Air Conditioning System for Office Buildings Based on Multivariate Prediction** Zezheng Zhou, Lihua Zhao	3:15pm - 3:30pm **GIS-based Analysis of Solar Power Generation Potential and Greenhouse Gas Emission Reduction from Photovoltaic Installations in Industrial Complexes of South Korea** Ji Hun Park, Beom Yeol Yun, Jihee Nam, Sumin Kim
3:30 - 3:45	3:30pm - 3:45pm **Lifecycle Impact Assessment of Net Zero Energy Buildings: Integrating Energy Simulation and Environmental Analysis_Case study comparison between Morocco and France** Mohamed Oualid Mghazli, Myriam Bahrar, Nouzha Lamdouar, Mohamed Elmankibi	3:30pm - 3:45pm **Hydrological Performance of Natural Based Solutions (NBS) on Commercial Roofs (CR) Towards Mitigating Urban Flooding** Maha Dabas, Sudhakar Molleti, James Saragosa	3:30pm - 3:45pm **Exploring the Performance of CLT External Walls Enhanced with Wood-Fibre-Based ETICS: Preliminary Field Measurement Insights** Villu Kukk, Targo Kalamees	3:30pm - 3:45pm **Innovative eco-acoustic absorber for building noise control** Islam Ben Amara, Raymond Panneton, Richard Gagné	3:30pm - 3:45pm **Pipecycle: A Heated Exchange Between Systems and Spacemaking** Leonard Palmer, Erika Naginski, Grace La, Jonathan Grinham	3:30pm - 3:45pm **Feasibility Study of a Hybrid Solar Ground Source Heat Pump to Supply the Heating and Cooling Demands of a Community in Toronto, Ontario** Amirhossein Eisapour, Farzin M. Rad, Alan S. Fung

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Saturday, 27 JULY 2024

3:45 - 4:00	3:45pm - 4:00pm **Assessing Environmental Impacts in Energy Production: A Life-Cycle Analysis of Renewable versus Non-Renewable Technologies** Myriam Bahrar, Mohamed Oualid Mghazli, Mohamed El Mankibi, Joud Aljumaa Aldakheel	3:45pm - 4:00pm **Thermal analysis of flat and steep street canyons with and without trees using numerical simulations** Muhammad Naeem Owais, Anwar Awol, Girma T. Bitsuamlak, Kamran Siddiqui	3:45pm - 4:00pm **Extra thermal insulation for recently built buildings to achieve nZEB** Anatolijs Borodinecs, Vladislavs Jacnevs, Lakatos Ákos	3:45pm - 4:00pm **The Architecture of Waste: Exploring Starch-based Materials for Eco-friendly Sound Absorption in Rome** Xinrui Cai, Sahda Salsabila, Tin Oberman, Brenda Parker, Marcos Cruz	3:45pm - 4:00pm **Feasibility Study on the Application of Earth-air Heat Exchangers in Archaeological Site Exhibition Facilities** Liwen Fan, Ruohan Zhang, Huarong Xie, Changchang Xia, Shuichi Hokoi, Yonghui Li	
4:00 - 5:00	**27th Late Aft_1:** **BUILDING RETROFIT** Location: **Room 1** Chair: Khaled Khaled	**27th Late Aft_2:** **POSITIVE ENERGY DISTRICTS** Location: **Room 2** Chair: Francesca Vecchi	**27th Late Aft_3:** **BUILDING TECHNOLOGY** Location: **Room 3** Chair: Miljana Horvat	**27th Late Aft_4:** **ACOUSTICS** Location: **Room 4** Chair: Raymond Panneton	**27th Late Aft_5:** **POSITIVE ENERGY DISTRICTS** Location: **Room 5** Chair: Alan S. Fung	
4:00 - 4:15	4:00pm - 4:15pm **Monitoring and Modelling of Panelized Overcladding Retrofits in Canadian Climate** Jordan McNally, Christopher Baldwin, Cynthia A. Cruickshank, Brock Conley, Mark Carver	4:00pm - 4:15pm **A national geodatabase to map consumptions for energy transition perspectives** Francesca Vecchi, Umberto Berardi	4:00pm - 4:15pm **An investigation of the Impact of Building Envelope Performance Degradation on Energy Consumption** Bofa Udisi, Javeriya Hasan, Sina Rahimi, Yangchao Li, Miljana Horvat, Mark Gorgolewski	4:00pm - 4:15pm **An interactive soundscape simulation tool based on the audio-visual comfort of urban park users** Haoran Ding, Qi Meng, Da Yang, Shuqi Zhao	4:00pm - 4:15pm **Comparison of three methods in addressing measurement uncertain data for urban building energy modeling** Chao Wang, Yue Yang, Xuhuiju Xia, Xing Shi	
4:15 - 4:30	4:15pm -4:30pm **Temperature dependent longterm thermal resistance of closed-cell foam insulations** Dulani Pankaja Abeysing Kodippili, Sudhakar Molleti, David VanReenen	4:15pm -4:30pm **A data-driven process for optimal incentive sharing in collective self-consumption groups of residential users** Rocco Giudice, Marco Savino Piscitelli, Roberto Chiosa, Alfonso Capozzoli	4:15pm -4:30pm **The effect of interior paint treatments on the hygrothermal conditions in internally insulated solid masonry walls** Nickolaj Feldt Jensen, Ruut Hannele Peuhkuri, Ernst Jan de Place Hansen, Panagiota Pagoni, Eva B. Møller	4:15pm -4:30pm **A distribution strategy for measuring points of street green space reducing traffic noise** Mengmeng Li, Yuanxiang Wu, Shi Sun, Mingfeng Zhang	4:15pm -4:30pm **Preliminary assessment of Positive Energy Districts with ontology-based energy models** Andrea Gabaldon, Jose Manuel Broto, Gerard Laguna, Saeed Ranjbar, Ursula Eicker	
4:30 - 4:45	4:30pm -4:45pm **Plastic Paint Versus Whitewash on Rendered Brickwork** Anders Nielsen, Kurt Kielsgaard Hansen, Carsten Rode	4:30pm -4:45pm **The impact of the predictive model on districts flexibility characteristics: MPC utilization** Tohid Jafarinejad, Arash Erfani, Dirk Saelens	4:30pm -4:45pm **Effect of exterior hydrophobisation on the heat loss through solid masonry walls with and without internal insulation** Ernst Jan de Place Hansen, Nickolaj Feldt Jensen, Ruut Hannele Peuhkuri, Panagiota Pagoni, Eva Birgit Møller	4:30pm -4:45pm **A systematic review of noise mapping development trend affected by END's release and update** Mingfeng Zhang, Yuanxiang Wu, Qi Meng, Mengmeng Li	4:30pm -4:45pm **Predicting Building Energy Demand Using Federated Learning with Attribute-Based Clustering** Jifar Mekonnen Hunde, Piragash Manmatharasan, Damitha Senevirathne, Tesfatsyon S. Ochono, Dagimawi D. Eneyew, Girma T. Bitsuamlak, Miriam A.M. Capretz, Katarina Grolinger	
4:45 - 5:00	4:45pm - 5:00pm **Structuring semi-structured data from building inspection reports using a large language model** Kaisa Svennberg, Jan Ekman, Per Kreuger	4:45pm - 5:00pm **Enhancing Urban Building Energy Simulations: Advanced Calibration of Stochastic Occupancy Models with Real Occupancy Data** Sanam Dabirian, Kayhan Alamatsaz, Ursula Eicker	4:45pm - 5:00pm **Hygrothermal assessment of internally insulation for historic half-timbered outer walls** Ernst Jan de Place Hansen, Nickolaj Feldt Jensen, Ruut Hannele Peuhkuri, Panagiota Pagoni, Eva Birgit Møller			
p.m. 5:00 - 5:30	**Closing** Location: Plenary room Chair: Umberto Berardi					

PARTNERS

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