

12th CONSTRUCTAL LAW CONFERENCE



Freedom, Design and Evolution

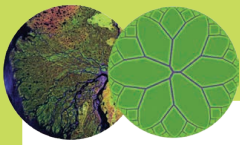
TORINO, Italy

September 21-22, 2023

Programme

Energy Center

Via Paolo Borsellino 38/16



CHAIRS

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Politecnico di Torino, Italy (Chair)

Giulia Grisolia

Politecnico di Torino, Italy (Co-chair)

Umit Gunes

Yildiz Technical University, Turkey (Coordinator)

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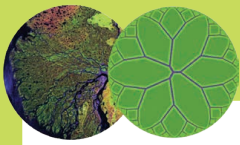
Federal University of Rio Grande do Sul, Brazil

Antonio Ferreira Miguel

University of Evora, Portugal

Houlei Zhang

*Nanjing University of Science
and Technology, China*



SPEAKERS

Abdulrahman Almerbati, *Saudi Arabia*

Adeel Arshad, *United Kingdom*

Mohamed M. Awad, *Egypt*

Dan Baciu, *Switzerland*

Adrian Bejan, *United States*

Christine Bizzell, *United States*

Melchiorre Casisi, *Italy*

Erdal Cetkin, *Turkey*

Miguel Clemente, *Portugal*

Rebecca Edelman, *United States*

Marcelo Risso Errera, *Brazil*

Christine Forni, *United States*

Bert G. J. Frederiks, *The Netherland*

Adinel Gavrus, *France*

José Félix Guil-Pedrosa, *Spain*

Umit Gunes, *Turkey*

Phillip Johnson, *United States*

Patrick Kalason, *France*

Shigeo Kimura, *Japan*

Jose Lage, *United States*

Raymond Lennon, *United States*

Sylvie Lorente, *United States*

Umberto Lucia, *Italy*

Alanna Manfredini, *United States*

Pezhman Mardanpour, *United States*

Lazaros Mavromatidis, *France*

Alexandru Morega, *Romania*

Claudia Naldi, *Italy*

Juan Ordonez, *United States*

Daniel Papla, *Poland*

Yazdan Pedram Razi, *United States*

Stephen Perin, *France*

Adrian Petrescu, *United States*

Ram Poudel, *United States*

Achintya Pramanick, *India*

Antonio Heitor Reis, *Portugal*

Roland Riek, *Switzerland*

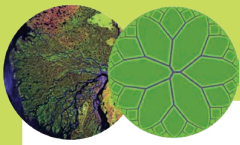
George Stanescu, *Brazil*

Giovanni Tanda, *Italy*

Alexander Tucker, *Canada*

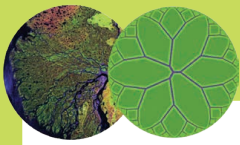
Jose Viriato Coelho Vargas, *United States*

Anna Weerakoon Karunatileke, *Sri Lanka*

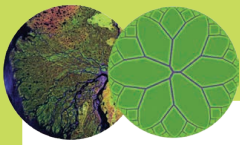


First day • 21st September 2023

- 8:30 Registration.
- 9:00 Opening.
- 9:20 Vascular Materials: Predicting Design Evolution.
A. Bejan
- 9:40 A Tree-shaped Constructal Design with Phase Change Material: a Novel Cooling Strategy.
A. Arshad
- 10:00 Constructal Design of Circular Fins Row in Cross Flow.
M. M. Awad, A. Waheed Mustafa, U. Abdullah
- 10:20 Constructal Flow of Constructal Law.
D. C. Baciú
- 10:40 Numerical Modeling for Volumetric Solar Receiver toward Enhancing Its Thermal Performance.
A. Almerbati
- 11:00 *Coffee break & Poster Session*
- 11:20 Diesel/Biodiesel/Biogas Mixtures Driven Compression Ignition Internal Combustion Engines Constructal Design.
J. V. Coehlo-Vargas, S. Arcanjo, J. C. Ordonez, S. H. Och, W. Balmant, A. B. Mariano, V. Kava
- 11:40 Human Freedom: Empowered as Designers.
C. Bizzel
- 12:00 Constructal Evolution of Networks of Exergy Flows.
M. Casisi, M. Reini, M. Capobianco, E. Nadalon
- 12:20 Evolution of a Cross Flow Heat Exchanger for Electric Vehicle Thermal Management.
E. Cetkin, S. Gocmen
- 12:40 Analysis and Generalization of Multi-Branching Radial Flow Structures.
M. R. Clemente, M. R. Oliveira Panão
- 13:00 *Lunch*

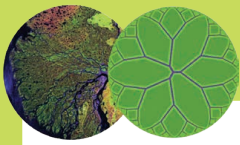


- 14:00 Drawing You Outside.
C. Forni
- 14:20 To Emerge or-Not-to Emerge; Reductive Freedom Creates Life, Being and Death.
B. G. J. Frederiks
- 14:40 Use of the Constructal Law to Prove the Maximum Work “Principle” Defining Plasticity, Contact Friction and Continuum Media Flow Using a Variational Optimization Framework. Application to Forward Extrusion Power Estimation.
A. Gavrus
- 15:00 Experimental Characterization of Steady State Refrigeration of Square Plates with Different Channel Shapes.
J. F. Guil-Pedrosa, L. M. García-Gutiérrez, N. García-Hernando, A. Soria-Verdugo
- 15:20 Constructal Network of Maritime Transportation.
U. Gunes, I. Ekmecki
- 15:40 *Coffee break & Poster Session*
- 16:10 A Constructal History of Ephesos.
P. Johnson
- 16:30 Static Optimization is not Constructal Law.
J. L. Lage, S. L. M. Junqueira
- 16:50 Discrete Time Physics: from Maupertuis Action Principle to Thermodynamics and Special Relativity.
R. Riek
- 17:10 Convection from a Horizontal Heated Circular Cylinder in an Adiabatic Tank. Application to Thermal Energy Storage.
S. Kimura, Y. Utanohara
- 17:30 An Introduction to Constructal Theory and Design of Flapping Wing Unmanned Aerial Vehicles.
R. Edelman
- 19:30 *Conference dinner (ticket holders only)*

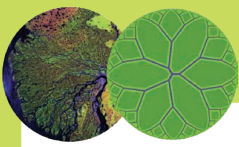


Second day • 22nd September 2023

- 8:30 Registration.
- 9:00 A Constructal Perspective on Time-Evolution of Online Social Networks.
R. Lennon
- 9:20 Morphing Capillary Networks for Passive Water Pumping.
S. Lorente, X. Zhang
- 9:40 A Constructal Law Perspective of Cancer's Volume/Area Expansion Ratio.
U. Lucia, G. Grisolia, D. Fino, T. S. Deisboeck
- 10:00 Addiction in Social Media: How the Constructal Law Facilitates Communication.
A. Manfredini
- 10:20 Evolutionary Aeroelastic Design of Aircraft.
P. Mardanpour
- 10:40 Interpreting the Evolution of Sensory Experiences in Architecture: the Constructal Law as a Powerful Tool for Envisioning the Creation of Future Spaces in a Rapid Changing Environment.
L. Mavromatidis
- 11:00 *Coffee break*
- 11:20 Shape and Structure in Electromagnetic Fields.
A. M. Morega, M. Morega
- 11:40 Geometrical Investigation of Forced Convective Flows over Staggered Arrangement of Cylinders Employing Constructal Design.
C. Naldi, A. P. Del Aghenese, H. O. Borges, G. F. Scursone, L. A. O. Rocha, L. A. Isoldi, J. F. Prolo Filho, C. Biserni, E. D. dos Santos
- 12:00 Constructal Design of Multicopters.
J. C. Ordonez, C. Ordonez
- 12:20 Analysis of Entropy on the European Market of Energy and Energy Commodities Prices.
D. Papla, K. Ostasiewicz, R. Siedlecki

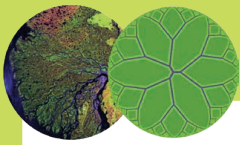


- 12:40 A Noise Reduction Procedure: a Constructal Approach.
Y. Pedram Razi, K. Maliwan, Y. Ezunkpe, F. Barez
- 13:00 *Lunch*
- 14:00 The Emergence of AI-assisted Software Development in the Light of the Constructal Law.
S. Perin
- 14:20 Music Distribution and Solar Powered Futuristic Scooters as Strange Bedfellows: Modernizing Personal Transportation and Prospects ahead Based on Exoskeleton (R) Evolution, and Wide Global Adoption of Innovation in Transportation Based on Constructal Law.
A. S. Petrescu, S. Petrescu, M. H. André, S. Duman
- 14:40 A Unified Thermodynamic Description of Life and Matter.
R. Poudel
- 15:00 Teaching Law of Motive Force and Constructal Law to Sophomore.
A. Pramanick
- 15:20 General Formalism for Structured Flows According to Constructal Law.
A. H. Reis
- 15:40 Constructal Colorimetric Abacus Allowing the Evaluation by the Students of the Skills Acquired: "One Point and That's All".
P. Kalason, H. Gaber
- 16:00 *Coffee break*
- 16:20 Constructal Design of a Mineral Carbonation System for Post-Combustion Carbon Capture.
M. Risso Errera, C. L. Manfredi Gasparovic, G. Stanescu
- 16:40 Sustainability Assessment In Built Environment Based On Entropy Generation.
G. Stanescu, M. Risso Errera
- 17:00 The Intersection-of-Asymptotes Method Applied to the Study of Skin Temperature Changes over Time during Running Exercise.
G. Tanda

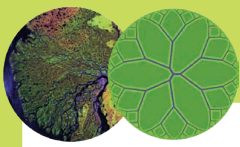


- 17:20 From Thermodynamic Principles to Evolutionary Institutions: a New Frontier in Engineering.
A. Tucker
- 17:40 Exploring 3PL Outsourcing Decisions on Selected Logistic Performance: a Systematic Literature Review and Future Research.
A. Weerakoon Karunatileke
- 18:00 Closing Cerimony.





1. Evolutionary Design with Freedom of Fin Channels.
H. Almahmoud
2. Thermal Performance Improvements in Heat Sinks by Using Constructal Law for Electronic Cooling Applications.
M. Awad
3. Dialog between Lines and Curves and an Homage to Leonardo.
D. C. Baciú
4. Constructal Design of Semi-elliptical Blocks Assembled into a Horizontal Channel Subjected to Flows with Mixed Convection Heat Transfer.
C. Biserni
5. Impact of Cars Entropy Flows in Climate Change.
A. Cuadras
6. The Contribution of Constructal Law for the Study of Complex Systems.
M. Riso Errera
7. The Constructal Mindset of Innovation.
P. Kalason
8. Short Peptide Amyloids Are Likely a Sequence Pool for Emergent Proteins.
W. Kwiatkowski
9. Heterogeneous Degradation in Li-ion Batteries.
V. J. Ovejas
10. Designing with Freedom for the World. Motivating for Innovation in Defense Acquisition, and Predicting Execution of Better (Military) Systems Design and Implementation with the Progress Principle and the Constructal Law.
A. S. Petrescu
11. Advances in Temperature Control Technology by Direct Injection of Liquid Water in Positive Displacement Air Compressors.
G. Stanescu, E. Barbu, V. Vilag, J. Vilag, A. Hank
12. Environmental, Social and Governance in the Shipping Industry: from the Perspective of EU and Turkey.
H. D. Tomur



The venue

The Conference (September 21-22) will be held in the new Energy Center Auditorium, via Paolo Borsellino 38/16, close to the Main Campus Area of Politecnico di Torino. It can be reached from the city centre in a short time by metro or bus. The closest metro station is **VINZAGLIO** (about 10 minutes' walking distance).

Instructions for speakers

Speakers are required to be in the meeting room at least 10 minutes before their session begins to check their presentations. Sessions are tightly scheduled and the allotted time must be strictly observed.

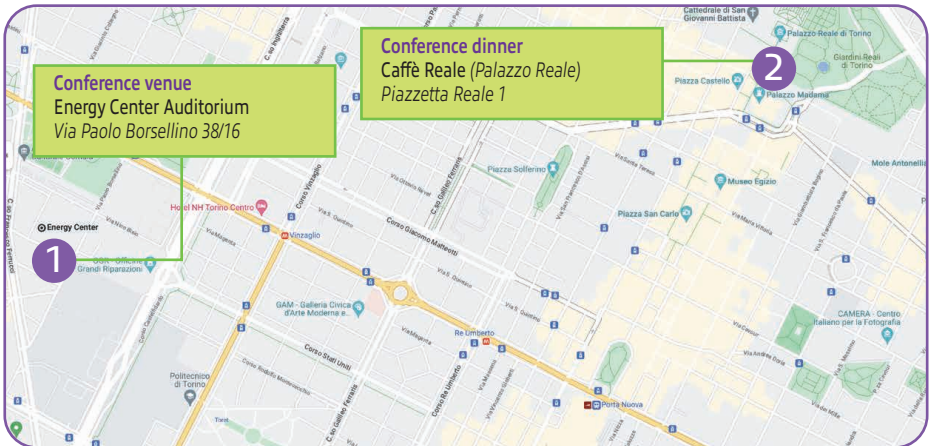
Please apply to your session chairpersons for further information on the session schedule.

Each conference room will be equipped with computers with PowerPoint 2010.

Use of personal laptops for presentations is discouraged due to the need for time savings and the possibility of problems with multiple computers switched in and out.

Presentations on USB sticks must be loaded well in advance (e.g. during breaks, at the latest) on the PCs available in the conference room before the beginning of the session.

For any further information on the audiovisual means, please apply to your session chair or conference staff in the meeting room.



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Conference venue

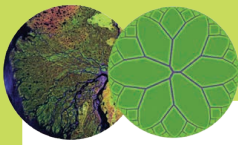
Energy Center Auditorium
Via Paolo Borsellino 38/16



2

Conference dinner

Caffè Reale (Palazzo Reale)
Piazzetta Reale 1



Registration

Pre-registered participants can collect their conference kit and personal name badge at the organizing secretariat desk located in the foyer of the Energy Centre as of September 21 at 8:30.

Badges

All delegates and exhibitors are kindly requested to always wear their name badge. Entrance to the meeting room will be limited to regularly enrolled participants only.

Language

Official language will be English. No simultaneous translation will be provided.

Coffee breaks and lunches

Coffee breaks and standing buffet lunches will be served in the conference venue lobby. See conference programme for coffee break and lunch times.

Conference Dinner

The conference dinner will be held at the historic Caffè Reale, located in the Royal Palace gardens, on Thursday September 21 at 19.30.

Dinner tickets can be bought online via the conference registration system.

Liability

Registered conference participants agree that neither the Organizing Committee nor the conference Secretariat are liable or assume any responsibility for damage or injuries to persons or property during the conference.

Participants are advised to arrange for their own health, travel and personal insurances.

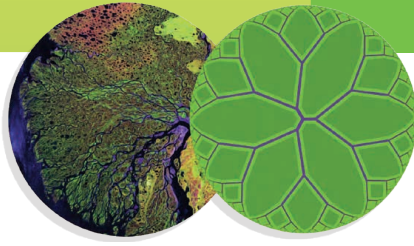
The conference organization does not cover individuals against cancellation of bookings, theft or damage to belongings.

Disclaimer

All best endeavours will be made to present the conference programme as published.

However, the conference Organizing Committee and the Secretariat reserve the right to alter or cancel, without prior notice, any arrangements, timetables, plans or other items relating directly or indirectly to the conference, for any cause beyond our reasonable control.

The conference Organizing Committee and the Secretariat are not liable for any loss or inconvenience caused as a result of such alteration.



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Freedom, Design and Evolution



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Organizing Secretariat

We are
SYMPOSIUM
3
YEARS

Symposium srl

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