Constructal Law Conference, 14-th Edition

Design in Nature and Evolution
— Design în Natura şi Evoluţie —

October 10-11, 2024

ACADEMIA ROMÂNĂ

Bucharest, Romania

Final Program

Thursday, 10 October – The Aula

8:00-8:30	Registration & Coffee 30 min.	
8:30-8:50	20 min	Opening: Nicolae Zamfir; Mircea Dumitru; Adrian Bejan; Alexandru Morega
8:50-10:30	Session 100 min.	5 papers:
	20 min	1c. **Adrian Bejan**: Perfection and diversity
	20 min	2c. **Umberto Lucia**, *Giulia Grisolia*: Definition of time: from the second to constructal law
	20 min	3c. **Alexandru M. Morega**, *Mihaela Morega*: Constructal couplings in the electropermeabilization of the cell membrane
	20 min	4c. **Miguel Panão**: Informational perspective on ramifications in constructal design
	20 min	5c. **Christine Bizzell**: Liberate human strength & life
10:30-10:50	Coffee 20 min.	
10:50-12:50	Session 120 min.	6 papers:
	20 min	6c. **Peter Vadasz**: Solutions of Newtonian gravitational waves and gravitational Poynting vector
		7c. **Celik Kurtoglu**: Temporary competitiveness and product cycle management
	20 min	8c. **Mircea Scurtu**: Constructal law leads to the discovery of the fundamental law of economics
	20 min	9c. **Ümit Guneş**: Evolution of maritime technology: advancements in ship design
	20 min	10c. **Paul Cizmaş**: Fluid modes, deep learning, and constructal law
	20 min	11c. **Miguel R. Clemente**: Turbulent multi-branching radial symmetric flow structures
12:50-13:50	Lunch 60 min	

The Amphitheatre (the library)

13:50-15:10	Session 80 min.	4 papers:
	20 min	12c. *Vanessa Kava*, **José Vargas**, Juan Ordonez, André Mariano: The eukaryote endosymbiotic origin: a constructal theory-based explanation
	20 min	13c. **Juan Ordonez**, Camilo Ordonez: Robotic legs design – constructal considerations. **Adrian S. Petrescu**: Got Peace? Once not free twice worried about losing freedom. The case for improving NATO and global peace based on constructal law improved knowledge production and use.
	20 min	14c. **Adinel Gavrus**: Constructual law applied to proof maximum work principle. Consequences on convexity and normal rule of bulking plasticity & surface friction potential together with estimation of real thermo-mechanical power during continuum media flows
	20 min	15c. **Matei C. Ignuta-Ciuncanu**, Philip Tabor, *Ricardo F. Martinez-Botas*: Constructal law, biomimicry, and topology optimization through the lens of generative AI
15:10-15:30	Coffee 20 min.	
15:30-16:50	Session 80 min.	4 papers:
	20 min	16c. **Terry Bristol**: Distinguishing motion and work in mechanics and engineering thermodynamics
		17c. **John Mullaly**: Universal dynamics: A theory of everything without inventing anything
	20 min	18c. **Aydogan Ibiş**: Prevention of earthquakes and global warming, design in the nature and sustainable architecture and engineering
		19c. **Lazaros Mavromatidis**: Architectural Ingenuity and the constructal law: unleashing Maxwell's demons
19:00-22:00	**Dinner**	**National Theater restaurant**

Friday, 11 October – the Amphitheater (the library)

8:00-8:30	Registration	
8:00-10:00	Session 120 min.	6 papers:
	20 min	20c. **Shigeo Kimura**, Yoichi Utanohara: Analysis of heat transfer to a sheet-type heat exchanger placed in running water-thermal energy extraction from irrigation water
	20 min	21c. **Shiva Ziaei**: Constructal design of latent heat storage systems
	20 min	22c. **Mohammad Reza Hajmohammadi**, *Umberto Lucia*, *Giulia Grisolia*, Mohammad Gharekhani: Optimal design of constructal conductive pathways using machine learning algorithms
	20 min	23c. **Serafim Gregory Scurtu**, Mircea Scurtu: Constructal law and the optimal global technologies LLC, America P technology
	20 min	24c. **Dan C. Baciu**, Sunit Kajarekar, Marcelo Risso Errera, Umit Gunes: Constructal flow of constructal thinking
	20 min	25c. **Samuel Savitt:** Optimizing formation flight design via the constructal law
10:00-10:20	Coffee 20 min.	

10:20-12:20	Session 120 min.	6 papers + 10 posters & art display (see the last table):
	20 min	26c. **Adrian S. Petrescu**: Got Peace? Once not free twice worried about losing freedom. The case for improving NATO and global peace based on constructal law improved knowledge production and use.
	20 min	27c. **Ventsislav Zimparov**, *M. Angelov*, V. Petkov: Maximum benefits from the use of T-shaped tree flow geometry with rectangular shaped of the channels: Performance evaluation criteria
	20 min	28c. Natalia Rangel Campagnaro, **Pezhman Mandanpour**: Evolutionary design of wind turbines
	20 min	29c. **Elsie (M. Gothman)**: Forgotten principles: how the digital age transformed the human connection to photography
	20 min	30c. **Andrei Marin**, Cristian V. Vraciu: The evolution of the turbulent buoyant plumes towards round cross sections: a constructal view
	20 min	31c. **Keena Gao**: Fountain of lights – constructal cascades
12:20-13:20	**Lunch**	
13:20-15:00	**Session 80 min.**	**5 papers:**
	20 min	32c. Umut Ege Samancıoğlu, **Erdal Çetkin**: Investigation of phase change material (PCM) with/without Aluminum plate for battery thermal management
	20 min	33c. **Kamal Mohamed Ali Nayel**, *Abdulrahman S. Almerbati*: Optimizing volumetric solar air receivers: numerical analysis of porosity and flow effects on temperature distribution
	20 min	34c. **Yongjian Gu**: Developing complete formulas to calculate the entropy change of ideal gases
	20 min	35c. **Albert T. Magnell**: Constructal Evolution of Genetic Coding Systems
	20 min	36c. **Marcelo Risso Errera**, Emilio Graciliano Ferreira Mercuri, George Stanescu: constructal design approach for carbon dioxide adsorption systems
15:00-15:30	Closing	

Day 1	Total = 19 papers (oral)
Day 2	Total = 17 papers (oral) + 10 papers (poster) + art displays

Posters & art display: Friday, 11 October — the Amphitheater (the library)

8:30-12:20	Poster session: 10 papers
	37c. **Yelda Veli**, Florin Săftoiu, Alexandru Morega: Interaction of ultrasonic and heat flow in essential oil extraction – a constructal glimpse
	38c. **Alin A. Dobre**, Andreea Mitrofan, Alexandru Morega: Flux - flow interaction in electromagnetic bioimpedance
	39c. **Peter Vadasz**: Quantum Mechanics - Deterministic vs Probabilistic
	40c. Chaianan Sailabada, Cristofer Hood Marques, Jose V.C. Vargas, **Juan Ordonez**: Cold Plate Designs: A comparison of evaluation metrics - constructal svelteness and global resistance

	41c. **José Vargas**, Marcus Pereira, Jeferson Souza, Diogo Pitz, Juan Ordonez, *Vanessa Kava*: Finned elliptic tubes heat exchangers in the turbulent regime constructal design
	42c. **George Stănescu**, Jeni Vilag, Valeriu Vilag, Ene Barbu, A low-impact high-efficiency Brayton cycle concept with evaporative cooling during the compression process using H2/CH4 fuel blends
	43c. **George Stănescu,** Aloísio Leoni Schmid, Alexandre Bessa Martins Alves, Alexandre Ruiz da Rosa, Marcelo Risso Errera, Enhancing energy access by earth-air heat exchanger for buildings' thermal comfort by the constructal design
	44c. **Erdal Çetkin**: Semi-empirical cycling aging models with enhanced accuracy for a NMC cell
	45c. **Mircea Scurtu**: Constructal law and the medicine crises in Romania
	46c. Ahmed M. Bukar, **Adulrahman S. Almerbati**: Enhanced electronic cooling using rectangular fin heat sinks: a comparative analysis