

ICCHMT ROME 2019

XII

International Conference
on Computational Heat,
Mass and Momentum
Transfer

3-6 SEPTEMBER 2019

Rome, Italy



Conference Agenda

Organized by



SAPIENZA
UNIVERSITÀ DI ROMA

in collaboration with



UNIVERSITY OF
CALGARY

Sponsor



Bezemijnyne systemy ogrzewania
Hybrydowe systemy nadzine
Chłodnictwo przemysłowe
Zamrażanie



Sapienza University

Via Eudossiana 18 | Rome

Roma Tre University

Via della Vasca Navale 79 | Rome

Chairs:

Andrea Vallati
Sapienza University

Roberto de Lieto Vollaro
Rome Tre University

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Date: Tuesday, 03/Sep/2019

7:30am - 9:00am	Registration
9:00am - 9:10am	Welcome Greetings of La Sapienza University
La Sapienza	
9:10am - 11:10am	KEY-01: Keynote Session 1 Session Chair: Prof. Jan Taler Plenary room
La Sapienza	
11:10am - 11:30am	Coffee Break
11:30am - 1:30pm	SE-01: Day 1 Session 1 Session Chair: Prof. Paweł Ochoń Plenary room
La Sapienza	
11:30am - 1:30pm	SE-02: Day 1 Session 2 Session Chair: Prof. MingJia Li Room 7
La Sapienza	
11:30am - 1:30pm	SE-03: Day 1 Session 3 Session Chair: Prof. Mathias Krause Room 17
La Sapienza	
1:30pm - 2:20pm	Lunch
2:20pm - 4:20pm	SE-04: Day 1 Session 4 Session Chair: Dr. Sandra Corasaniti Plenary room
La Sapienza	
2:20pm - 4:20pm	SE-05: Day 1 Session 5 Session Chair: Prof. Ali Cemal Benim Room 7
La Sapienza	
2:20pm - 4:20pm	SE-06: Day 1 Session 6 Session Chair: Prof. Emanuele Habib Room 17
La Sapienza	
4:20pm - 4:40pm	Coffee Break

Date: Wednesday, 04/Sep/2019

7:30am - 9:00am	Registration
9:00am - 9:10am	Welcome Greetings of Roma Tre University
Uniroma Tre	
9:10am - 11:10am	KEY-02: Keynote Session 2 Session Chair: Prof. Abdulmajeed Mohamad Plenary room
Uniroma Tre	
11:10am - 11:30am	Coffee Break
11:30am - 1:30pm	SE-07: Day 2 Session 7 Session Chair: Prof. Sang-Ho Suh Room 20
Uniroma Tre	

11:30am - 1:30pm	SE-08: Day 2 Session 8 Session Chair: Prof. Rachid Bennacer Room 20
Uniroma Tre	
11:30am - 1:30pm	SE-09: Day 2 Session 9 Session Chair: Dr. Marek Jaszczur Room 21
Uniroma Tre	
11:30am - 1:30pm	SE-10: Day 2 Session 10 Session Chair: Dr. Ivano Petracci Room 22
Uniroma Tre	
1:30pm - 2:20pm	Lunch
2:20pm - 4:20pm	SE-11: Day 2 Session 11 Session Chair: Prof. Lubna Younis Plenary room
Uniroma Tre	
2:20pm - 4:20pm	SE-12: Day 2 Session 12 Session Chair: Prof. Janusz T. Cieslinski Plenary room
Uniroma Tre	
2:20pm - 4:20pm	SE-13: Day 2 Session 13 Session Chair: Dr. Magdalena Piasecka Room 21
Uniroma Tre	
2:20pm - 4:20pm	SE-14: Day 2 Session 14 Session Chair: Dr. Piotr Łapka Room 22
Uniroma Tre	
4:20pm - 4:40pm	Coffee Break and Conference Group Photo
4:40pm - 6:00pm	PS-01: Day 2 Poster Session 1
Uniroma Tre	
Date: Thursday, 05/Sep/2019	
8:00am - 9:00am	Registration
9:00am - 11:00am	KEY-03: Keynote Session 3 Session Chair: Prof. Francesco Asdrubali Plenary room
Uniroma Tre	
11:00am - 11:20am	Coffee Break
11:20am - 1:20pm	SE-15: Day 3 Session 15 Session Chair: Prof. Aldo Fanchiotti Plenary room
Uniroma Tre	
11:20am - 1:20pm	SE-16: Day 3 Session 16 Session Chair: Prof. Artur Maciag Room 20
Uniroma Tre	
11:20am - 1:20pm	SE-17: Day 3 Session 17 Session Chair: Prof. Rafal Kobylecki Room 21
Uniroma Tre	
11:20am - 1:20pm	SE-18: Day 3 Session 18 Session Chair: Prof. Lucia Fontana Room 22
Uniroma Tre	

1:30pm - 2:20pm	Lunch
2:20pm - 4:20pm	SE-19: Day 3 Session 19 Session Chair: Prof. Krishnaswamy Nandkumar Plenary room
2:20pm - 4:20pm	SE-20: Day 3 Session 20 Session Chair: Prof. Bujalski Wojciech Room 20
2:20pm - 4:20pm	SE-21: Day 3 Session 21 Session Chair: Prof. Sławomir Pietrowicz Room 21
2:20pm - 4:20pm	SE-22: Day 3 Session 22 Session Chair: Prof. Oronzio Manca Room 22
4:20pm - 4:40pm	Coffee Break
4:40pm - 6:00pm	PS-02: Day 3 Poster Session 2
Date: Friday, 06/Sep/2019	
8:00am - 9:00am	Registration
9:00am - 11:00am	SE-23: Day 4 Session 23 Session Chair: Prof. Pieter Rousseau Plenary room
9:00am - 11:00am	SE-24: Day 4 Session 24 Session Chair: Dr. Mirosław Seredyński Room 20
9:00am - 11:00am	SE-25: Day 4 Session 25 Session Chair: Prof. Tadeusz Wójcik Room 21
11:00am - 11:20am	Coffee Break and Closing Greetings

KEY-01: Keynote Session 1

Time: Tuesday, 03/Sep/2019: 9:10am - 11:10am · Location: La Sapienza

Session Chair: Jan Taler

9:10am - 10:10am

Fluid flow control and simulation with lattice boltzmann methods: application to process and medical engineering

Mathias Krause

Karlsruhe Institute of Technology (KIT), Germany

10:10am - 11:10am

Smart energy systems and 4th generation district heating

Henrik Lund

Energy Planning at Aalborg University, Denmark

SE-01: Day 1 Session 1

Time: Tuesday, 03/Sep/2019: 11:30am - 1:30pm · Location: La Sapienza

Session Chair: Paweł Odroń

11:30am - 11:45am

Thermal characteristics and mathematical model of thin aluminum vapor chambers

Shuang Han^{1,2}, Lixin Yang^{1,2}

¹Beijing Jiaotong University; ²Beijing Key Laboratory of Flow and Heat Transfer of Phase Changing in Micro and Small Scale

11:45am - 12:00pm

Effect of solid heat conduction on thermoacoustic oscillations of supercritical n-decane flowing inside a miniature tube

Bo Ruan, Jiaqi Li, Xiaowei Gao

Dalian University of Technology, P. R. China

12:00pm - 12:15pm

Thermal stress analysis of an annular fin of hyperbolic profile using admonian double decomposition method

Balaram Kundu, Dulal Krishna Mandal

Jadavpur University, India

12:15pm - 12:30pm

Transient response of a plate-fin-and-tube heat exchanger considering different heat transfer coefficients in individual tube rows

Dawid Taler, Jan Taler, Katarzyna Wrona

Cracow University of Technology, Poland

12:30pm - 12:45pm

Heat Transfer and Fluid Flow analysis of porous media heat exchangers using Aluminium Oxide-water nanofluids

Anjan R Nair, Rajkumar M. R., Dijin J. S

College of Engineering Trivandrum, India

12:45pm - 1:00pm

Numerical investigation of the flow behavior of a novel fluidization based particle thermal energy storage

Verena Sulzgruber, David Wünsch, Heimo Walter, Markus Haider

TU Wien, Austria

1:00pm - 1:15pm

Transport phenomenon and optimization of simultaneously developing flow and heat transfer in twisted sinusoidal wavy microchannel under pulsating inlet flow condition

Suvanjan Bhattacharyya¹, Sampad Gobinda Das², Himadri Chattopadhyay², M.A. Moghimi¹, Ali Cemal Benim³

¹University of Pretoria, South Africa; ²Jadavpur University, India; ³Duesseldorf University of Applied Sciences, Germany.

SE-02: Day 1 Session 2

Time: Tuesday, 03/Sep/2019: 11:30am - 1:30pm · Location: La Sapienza

Session Chair: MingJia Li

11:30am - 11:45am

Numerical and experimental investigations of Fractional Flow Reserve (FFR) in a stenosed coronary artery.

Supratim Saha, T Purushotham, Arul Prakash K

Indian Institute of Technology Madras, India

11:45am - 12:00pm

Numerical and experimental study on convective heat transfer characteristics in foams materials

Hongyan Lu^{1,2}, Lixin Yang^{1,2}, Zhiyong Wu³

¹Beijing Jiaotong University; ²Beijing Key Laboratory of Flow and Heat Transfer of Phase Changing in Micro and Small Scale;

³The Key Laboratory of Solar Thermal Energy and Photovoltaic System

12:00pm - 12:15pm

Modelling and simulation of wool steaming for the efficient management of decatizing processes

Fabiana Federica Ferro, Mirco Rampazzo, Alessandro Beghi

Università degli Studi di Padova, Italy

12:15pm - 12:30pm

Natural convection combined with surface radiation in a rotating cavity with an element of variable volumetric heat generation

Stepan Mikhailenko¹, Mikhail Sheremet¹, Ioan Pop²

¹Tomsk State University, Russian Federation; ²Babes-Bolyai University, Romania

12:30pm - 12:45pm

The multi-domain model of solute transport in binary alloy

Miroslaw Seredyński, Jerzy Banaszek

Warsaw University of Technology, Faculty of Power and Aeronautical Engineering, Institute of Heat Engineering, Poland

12:45pm - 1:00pm

Direct numerical simulations of natural convection flows in a cubical enclosure with differentially heated opposite walls

Alexandre Fabregat Tomas, Jordi Pallares Curto

Rovira i Virgili University, Spain

1:00pm - 1:15pm

Numerical investigations of film-cooling flow structures in a fan-shaped hole

Ali Zamiri, Jin Taek Chung

Korea University, Korea, Republic of (South Korea)

1:15pm - 1:30pm

Numerical investigation on influence of sea-current velocity profile on the propagation characteristics of hazardous noxious substances spilled from the ship

Min Kyu Ko, Chan Ho Jeong, Moonjin Lee, Seong Hyuk Lee

Chung-Ang University, Korea, Republic of (South Korea);

SE-03: Day 1 Session 3

Time: Tuesday, 03/Sep/2019: 11:30am - 1:30pm · Location: La Sapienza

Session Chair: Mathias Krause

11:30am - 11:45am

Study on the Influence Law of Sensor Material Characteristics on Thermal Environment Measurement

Lei Zeng¹, Mingsong Ding¹, Bo Qiu¹, Wengang Zong², Yewei Gui¹

¹China Aerodynamics Research and Development Center; ²Sichuan University

11:45am - 12:00pm

Effective numerical methods for calculating the non-stationary heat processes in multiphase media

Nadezda Nikolaevna Ermolaeva, Galina Ibragimovna Kurbatova

St Petersburg University, Russian Federation

12:00pm - 12:15pm

Repeated Richardson extrapolation with verification of the type and forms of applying boundary conditions in CFD

Fabiana de Fatima Giacomini, Josafa Magno dos Santos

Technological Federal University of Parana, Brazil

12:15pm - 12:30pm

Numerical study of fluid flow and heat transfer in a straight microchannel with standing surface acoustic waves

Sining Li¹, Jianping Cheng¹, Hongna Zhang^{1,2}, Weihua Cai¹, Fengchen Li²

¹Harbin Institute of Technology, China, People's Republic of; ²Sun Yat-sen University, Zhuhai, China

12:30pm - 12:45pm

Correlation between geometry and temperature distribution of chicken house using Computational Fluid Dynamics (CFD)

Chia-Ti Tseng¹, Jia-Kun Chen¹, Tzu-I Tseng²

¹National Taiwan University, Taiwan; ²National Center for High-Performance Computing

12:45pm - 1:00pm

Numerical estimation of thermal load in a three blade vertically agitated mixer

Anshul Singh Tomar, Harish K G, K Arul Prakash

Indian Institute of Technology Madras, India

1:00pm - 1:15pm

Numerical analysis of multiphase flow through axial vortex tube cyclone separator

Gopalakrishnan B, Arul Prakash K

IIT Madras, India

1:15pm - 1:30pm

Evaluation of Human Thermal Comfort Model in Residential Artificial Environment

Hongbo Xu, Mingsheng Tang

Technical Institute of Physics and Chemistry, CAS, China

SE-04: Day 1 Session 4

Time: Tuesday, 03/Sep/2019: 2:20pm - 4:20pm · Location: La Sapienza

Session Chair: Sandra Corasaniti

2:20pm - 2:35pm

Experiment and Numerical investigation on Flow and Heat Transfer Characteristics in a Horizontal Long small channel of plate OTSG

Xiaofei Yuan¹, Lixin Yang²

¹Beijing Jiaotong University; ²Beijing Key Laboratory of Flow and Heat Transfer of Phase Changing in Micro and Small Scale

2:35pm - 2:50pm

Numerical investigation on flow and heat transfer characteristics in the 17x17 full-scale fuel assembly

Zihao Tian^{1,2}, Lixin Yang^{1,2}

¹Institute of Thermal Engineering, School of Mechanical, Electronic and Control Engineering, Beijing Jiaotong University, Beijing, China; ²Beijing Key Laboratory of Flow and Heat Transfer of Phase Changing in Micro and Small Scale, Beijing, China

2:50pm - 3:05pm

Performance analysis and tube inlet orifice length evaluation of a once-through steam generator

Hun Sik Han, Han-Ok Kang, Juhyeon Yoon, Young In Kim, Youngmin Bae, Sang Ji Kim

Korea Atomic Energy Research Institute, Korea, Republic of (South Korea)

3:05pm - 3:20pm

Computational prediction of two-phase flow in passive residual heat removal system of an integral reactor

Joo Hyung Moon, June Woo Kee, Seungyeob Ryu

Korea Atomic Energy Research Institute, Korea, Republic of (South Korea)

3:20pm - 3:35pm

A Numerical Investigation of Radiation Feedback in Different Regimes of Opposed Flow Flame Spread

Kenneth Dong, Subrata Bhattacharjee

San Diego State University, United States of America

3:35pm - 3:50pm

Modeling of flame-generated turbulence and counter-gradient diffusion in stagnating turbulent premixed flames

Ahmed Neche

University of Blida1, Algeria

3:50pm - 4:05pm

Modeling of shaped charge jet formation: comparative studies of the numerical approach.

Bartosz Fikus, Paweł Płatek, Jacek Janiszewski

Faculty of Mechatronics and Aerospace, Military University of Technology, Warsaw, Poland

4:05pm - 4:20pm

A new simulation model for a grate firing system in openfoam

Frank Ulrich Rückert¹, Daniel Lehser Pfeffermann¹, Danjana Theis¹, Ju Pyo Kim², Andre Schargen², Ingo Zorbach², Jens Sohnemann²

¹University of Applied Sciences Saarbrücken, Germany; ²Steinmüller Babcock Environment GmbH, Germany

SE-05: Day 1 Session 5

Time: Tuesday, 03/Sep/2019: 2:20pm - 4:20pm · *Location:* La Sapienza

Session Chair: Ali Cernal Benim

2:20pm - 2:35pm

A realistic vapour phase heat transfer model for the weathering of LNG stored in large tanks

Felipe Huerta, Velisa Vesovic

Department of Earth Science and Engineering, Imperial College London, London, SW7 2AZ, UK

2:35pm - 2:50pm

Experimental investigation on effect of helical grooves on condensation heat transfer performance of vertically oriented copper tubes

Jyothish Abraham¹, Venugopal G², Rajkumar M R¹

¹College of Engineering Trivandrum, India; ²Government Engineering College Thrissur

2:50pm - 3:05pm

Effect of gas spring on the stable operation criteria of free-piston stirling engine

Chin-Hsiang Cheng, Shang-Ting Huang

Department of Aeronautics and Astronautics, National Cheng Kung University, Taiwan

3:05pm - 3:20pm

Effect of the engine speed and the loading on the heat transfer within exhaust valves

Mahfoudh Cerdoun¹, Farsaoui Bouziane¹, Smail Khalfallah¹, Rafik Ankr¹, Carlo Carcasci²

¹Ecole Militaire Polytechnique, Algeria; ²University of Florence, Italy

3:20pm - 3:35pm

Three dimensional CFD modelling of thermal-lag engine

Chin-Hsiang Cheng, Duc-Thuan Phung

National Cheng Kung University, Taiwan

3:35pm - 3:50pm

Performance evaluation of a beta-type Stirling engine based on CFD simulation

Chin-Hsiang Cheng, Duc-Thuan Phung

National Cheng Kung University, Taiwan

3:50pm - 4:05pm

Thermal transport and melting characteristics of carbon based phase change nanocomposites

Harish Sivasankaran, Yasuyuki Takata

Kyushu University, Japan

4:05pm - 4:20pm

Heat transfer characteristics of circular, elliptical, mixed tube and elliptical tube with splitter plate cross flow heat exchanger

Aneesh K Mohanan, Prasad B V S S S, Vengadesan S, Arul Prakash K

Indian Institute Of Technology Madras, India

SE-06: Day 1 Session 6

Time: Tuesday, 03/Sep/2019: 2:20pm - 4:20pm · *Location:* La Sapienza

Session Chair: Emanuele Habib

2:20pm - 2:35pm

Investigation of multi-stage micro turbine with labyrinth seal using computational fluid dynamics

Yunseok Ha, Jungwan Kim, Yongbok Lee

Korea Institute of Science and Technology, Korea, Republic of (South Korea)

2:35pm - 2:50pm

An adaptive approach for power management applied to database servers, using renewable energy

Wendel Goes Pedrozo^{1,2}, Leonardo Henrique Pereira²

¹Technological Federal University of Paraná, Brazil; ²Pontifical Catholic University of Paraná, Brazil

2:50pm - 3:05pm

Analysis of the Proton-Exchange Membrane Fuel Cell in transient operation

Andrzej Tadeusz Wilk, Daniel Paweł Węcel

Silesian University of Technology, Poland

3:05pm - 3:20pm

Computational study of active flow control drag reduction for utility vehicle

Jędrzej Mosiężny^{1,2}, Bartosz Ziegler¹

¹Poznań University of Technology, Poland; ²Redos Trailers Sp. z o.o

3:20pm - 3:35pm

Analysis of the impact of coal quality on the heat transfer distribution in a high ash pulverized coal boiler using co simulation

Pieter Gerhardus Rousseau, Ryno Laubscher
University of Cape Town, South Africa

3:35pm - 3:50pm

Energy-based modelling and simulation of liquid immersion cooling systems

Michele Lionello¹, Mirco Rampazzo¹, Alessandro Beghi¹, Damiano Varagnolo², Mattias Vesterlund³

¹University of Padova, Italy; ²Norwegian University of Science and Technology, Norway; ³Swedish Institute of Computer Science North, Sweden

3:50pm - 4:05pm

One d dynamic thermal model of receiver tube for linear fresnel reflectors

Roberto Tascioni^{1,2}, Luca Cioccolanti², Pero Pili³, Roberto Manca³, Emanuele Habib¹

¹Sapienza University of Rome, Italy; ²Università Telematica eCampus, Italy; ³Elianto S.R.L., Italy

4:05pm - 4:20pm

Individual pump flow control method of booster pump system

Kyungwuk Kim, Md Rakibuzzaman, Sang-Ho Suh

Department of Mechanical Engineering, Soongsil University, Seoul, Korea;

KEY-02: Keynote Session 2

Time: Wednesday, 04/Sep/2019: 9:10am - 11:10am · *Location:* Uniroma Tre

Session Chair: Abdulmajeed Mohamad

9:10am - 10:10am

Recent developments of lattice Boltzmann methods for complex transport phenomena

Giacomo Falcucci

Tor Vergata University, Italy

10:10am - 11:10am

A numerical and experimental analysis of multiphysical effects on microalgae growth in photobioreactors

MingJia Li

Xi'an Jiaotong University, China

SE-07: Day 2 Session 7

Time: Wednesday, 04/Sep/2019: 11:30am - 1:30pm · *Location:* Uniroma Tre

Session Chair: Sang-Ho Suh

11:30am - 11:45am

Some accuracy related aspects in two-fluid hydrodynamic sub-grid modeling of gas-solid riser flows

Joseph Mouallem¹, Seyed Reza Amini Niaki², Norman Chavez Cussy³, Christian Costa Milioli³, Fernando Eduardo Milioli³

¹Department of mechanical and mechatronics engineering, University of Waterloo, Canada; ²Institute of Mathematics and Computer Sciences, University of São Paulo, Brazil; ³Department of Mechanical Engineering, School of Engineering of São Carlos, University of São Paulo, Brazil

11:45am - 12:00pm

Lattice Boltzmann simulation for liquid-gas-solid flow based on phase-field model

Qiang He, Weifeng Huang

Tsinghua University, China

12:00pm - 12:15pm

Evaluation of droplet drag force model on spray dynamics and thermal behaviour of R134a two-phase flashing spray

Zhifu Zhou¹, Dongqing Zhu¹, Guanyu Lu¹, Weitao Wu², Yubai Li³, Bin Chen¹

¹Xi'an Jiaotong University, China; ²Nanjing University of Science and Technology, China; ³Carnegie Mellon University, USA

12:15pm - 12:30pm

Numerical study on the Reynolds number effects in a prismatic tank using natural frequency of the prismatic shapes

Hyunjong Kim¹, Parthasarathy Naniundan², Yeon Won Lee²

¹Korea Atomic Energy Research Institute, Daejeon, Republic of (South Korea); ²Department of Mechanical Design Engineering, Pukyong National University, Busan, Republic of (South Korea)

12:30pm - 12:45pm

Numerical Study of Sensitivity of Turbulent Jet Scour to porosity and internal friction angle.

Mariana Mendina Gourgues, Gabriel Usera Velasco

Facultad de Ingeniería, Universidad de la República, Uruguay

12:45pm - 1:00pm

Experimental investigation of flow boiling heat transfer in mini-channel heat sink.

Hyeong-geun Kim, Sung-min Kim

Univ. Sungkyunkwan, Korea, Republic of (South Korea)

1:00pm - 1:15pm

Simulation of single water droplet evaporation in limited space

Bin Liu, Yang Li, Aiqiang Chen, Georges El Achkar

Tianjin University of Commerce, People's Republic of China

1:15pm - 1:30pm

Numerical analysis of a turbocharger compressor.

Kristaq Hazizi¹, Ahad Ramezpour¹, Aaron Costall², Mehrdad Asadi¹

¹Anglia Ruskin University, United Kingdom; ²Imperial College London, United Kingdom

SE-08: Day 2 Session 8

Time: Wednesday, 04/Sep/2019: 11:30am - 1:30pm · *Location:* Uniroma Tre

Session Chair: Rachid Bennacer

11:30am - 11:45am

Strength analysis on edge sealing glass using microwave

Jae Kyung Kim¹, Euy Sik Jeon^{1,2}

¹Industrial Technology Research Institute, Kongju National University, Korea, Republic of (South Korea); ²Department of Mechanical Engineering, Graduate School, Kongju National University, Korea, Republic of (South Korea)

11:45am - 12:00pm

Macro-segregation Modeling of Eutectic Solidification using Lattice Boltzmann Method

Himadri Chattopadhyay, Runa Samanta, Chandan Guha

JADAVPUR UNIVERSITY, India

12:00pm - 12:15pm

Numerical solutions for the Carreau thin film flow and heat transfer over an unsteady stretching sheet

Kohilavani Naganthran, Roslinda Nazar, Ishak Hashim

Universiti Kebangsaan Malaysia, Malaysia

12:15pm - 12:30pm

Modelling drying kinetics of Black Soldier Fly (*Hermetia illucens*, L.) larvae

Pascoal da Silva^{1,3}, Nuno Ribeiro², Maria Nazare Coelho Pinheiro^{1,4}, Rui Costa²

¹Instituto Politécnico de Coimbra, Instituto Superior de Engenharia de Coimbra, Portugal; ²CERNAS, Instituto Politécnico de Coimbra, Escola Superior Agrária, Bencanta, Portugal; ³Centro de Matemática da Universidade de Coimbra, Portugal; ⁴Centro de Estudos de Fenómenos de Transporte, Faculdade de Engenharia da Universidade do Porto, Portugal

12:30pm - 12:45pm

Double Diffusive Magnetohydrodynamics Casson Fluid Flow over a Shrinking Sheet with Soret and Dufour Effects

Siti Suzilliana Putri Mohamed Isa^{1,2}, Shahanaz Parvin¹, Amira Yusoff³, Norihan Md. Arifin^{1,3}

¹Institute for Mathematical Research, Universiti Putra Malaysia, Malaysia; ²Centre of Foundation Studies for Agricultural Science, Universiti Putra Malaysia, Malaysia; ³Department of Mathematics, Universiti Putra Malaysia, Malaysia

12:45pm - 1:00pm

Sensitivity of numerical predictions to the permeability coefficient in simulations of melting and solidification using the enthalpy-porosity method

Amin Ebrahimi¹, Chris R. Kleijn², Ian M. Richardson¹

¹Department of Materials Science and Engineering, Delft University of Technology, Netherlands; ²Department of Chemical Engineering, Delft University of Technology, Netherlands

1:00pm - 1:15pm

The numerical study of the effects of LES/RANS turbulent models to estimate flow structure within bubble column reactor (BCR)

Mojtaba Goraki Fard, Youssef Stiriba, Xavier F. Grau

Rovira i Virgili University (URV), Spain

1:15pm - 1:30pm

On numerical investigation of Nusselt distribution profile of heat sink using lateral impingement of air jet

Umair Mohammed Siddique

SVKM's Narsee Monjee Institute of Management Studies, India

SE-09: Day 2 Session 9

Time: Wednesday, 04/Sep/2019: 11:30am - 1:30pm · Location: Uniroma Tre

Session Chair: Marek Jaszczur

11:30am - 11:45am

The effects of exterior boundary conditions in tumor tissues fluid transport under heating conditions

Assunta Andreozzi¹, Marcello Iasiello¹, Paolo Antonio Netti²

¹DII-Università di Napoli FEDERICO II, Italy; ²DICMAPI-Università di Napoli FEDERICO II, Italy

11:45am - 12:00pm

Thermal effects on fluid flow through curved arteries

Marcello Iasiello¹, Assunta Andreozzi¹, Nicola Bianco¹, Kambiz Vafai²

¹DII-Università di Napoli FEDERICO II, Italy; ²University of California, Riverside, USA

12:00pm - 12:15pm

A new concept of surgical patch used in vascular surgery

Natalia Lewandowska¹, **Michał Ciałkowski**¹, Marcin Warot²

¹Poznan University of Technology, Poland; ²Medical University of Poznan, Poland

12:15pm - 12:30pm

The impact of the artery geometry with the sewn surgical patch on the blood flow disorders

Natalia Lewandowska, **Michał Ciałkowski**

Poznan University of Technology, Poland

12:30pm - 12:45pm

Measurements of the heat transfer rates during therapeutic hypothermia of a newborn's brain cooling

Dominika Bandała¹, Ziemowit Ostrowski¹, Marek Rojczyk¹, Wojciech Walas², Zenon Halaba³, Andrzej J. Nowak¹

¹Silesian University of Technology, Poland; ²University Clinical Hospital in Opole, Poland; ³University of Opole, Poland

12:45pm - 1:00pm

A new simulation method for laser speckle imaging to investigate hemodynamics

Bin Chen, Xu Sang, Dong Li

Xi'an Jiaotong University, China

1:00pm - 1:15pm

Meshing strategy for bifurcation arteries in the context of blood flow simulation accuracy

Natalia Lewandowska, Jędrzej Mosiężny

Poznań University of Technology, Poland

1:15pm - 1:30pm

A temperature based model for measuring the performance of high-rate methane biofilters (HMBFs)

Samadhi Gunasekara, Patrick Hettiaratchi

Center for Environmental Engineering Research and Education (CEERE) and Department of Civil Engineering, University of Calgary, Alberta, Canada

SE-10: Day 2 Session 10

Time: Wednesday, 04/Sep/2019: 11:30am - 1:30pm · *Location:* Uniroma Tre

Session Chair: Ivano Petracchi

11:30am - 11:45am

A numerical model for predicting the impact of porosity distribution within a Chemical Biological Radiological and Nuclear respirator canister

Samuel G. A. Wood¹, Nilanjan Chakraborty¹, Martin W. Smith², Mark J. Summers²

¹Newcastle University, United Kingdom; ²Defence Science and Technology Laboratory, United Kingdom

11:45am - 12:00pm

Analysis of field synergy in bottom heated lid driven cubical cavity

Rani HP¹, Narayana Vekamulla¹, Rameshwar Y²

¹National Institute of Technology Warangal, India; ²Osmania University, Hyderabad, India

12:00pm - 12:15pm

Numerical simulation of vortex induced vibrations of a circular cylinder: isothermal and heat transfer cases

Chandrakant Rameshchandra Sonawane¹, Yogesh B More², J C Mandal¹, AnandKumar Pandey¹

¹Symbiosis International University, India, India; ²Indian Institute of Technology Bombay, Mumbai

12:15pm - 12:30pm

Thermal Analyses on the cooling system of HYPROB LOX/LCH4 Demonstrator manufactured by means of electroplating process

Daniele Ricci¹, Francesco Battista¹, Vito Salvatore¹, Manrico Fragiaco¹, Luca Manni²

¹CIRA - Italian Aerospace Research Center, Italy; ²CECOM srl - Via Tiburtina, km 18,700, 00012 - Guidonia Montecelio, Italy

12:30pm - 12:45pm

Effect of top wall confinement on onset of three-dimensionality in sinusoidal wavy channels

Harikrishnan Sankara Varrier, Shaligram Tiwari

IIT Madras, India

12:45pm - 1:00pm

Magnetohydrodynamics (MHD) flow and heat transfer in a dual stratified micropolar fluid over a permeable shrinking/stretching sheet

Najiyah Safwa Khashi^{1,2}, Norihan Md Arifin¹, Roslinda Nazar³, Ezad Hafidz Hafidzuddin¹, Nadiyah Wahid³, Ioan Pop⁴

¹Universiti Putra Malaysia, Malaysia; ²Universiti Teknikal Malaysia Melaka, Malaysia; ³Universiti Kebangsaan Malaysia, Malaysia; ⁴Babeş-Bolyai University, Romania

1:00pm - 1:15pm

Compressible Flow Simulation of High Pressure Cold Gas Inflator to Analyze Filling Behavior of Different Gases and Control Valve Requirements for Automotive Airbags

Naveen Raghavendra Shirur, Christain Birkner

Technische Hochschule Ingolstadt, Germany

1:15pm - 1:30pm

A parametric study on cavitation flow through steam trap valves under high pressure difference

Chang Qiu¹, Zhi-xin Gao¹, Zhi-jiang Jin¹, Jin-yuan Qian^{1,2,3}, Bengt Sundén³

¹Institute of Process Equipment, Zhejiang University, PR China; ²State Key Laboratory of Fluid Power and Mechatronic Systems, Zhejiang University, PR China; ³Department of Energy Sciences, Lund University, Sweden

SE-11: Day 2 Session 11

Time: Wednesday, 04/Sep/2019: 2:20pm - 4:20pm · *Location:* Uniroma Tre

Session Chair: Lubna Younis

2:20pm - 2:35pm

The interaction effects between droplets condensing from moist air using a distributed point sink method

Shaofei Zheng, Ferdinand Eimann, Christian Philipp, Tobias Fieback, Ulrich Gross

Institute of Thermal Engineering, TU Bergakademie Freiberg, Germany

2:35pm - 2:50pm

The wind test on heat loss from three coil cavity receiver for a parabolic dish collector

Ramola Sinha², Nitin. P. Gulhane¹, Paweł Ocioń³, Jan Taler³, Rahimi Gorji Mohammad⁴

¹VJTI, Matunga-Mumbai, India; ²K.J.Somaiya College of Engineering, India; ³Cracow University of Technology, Poland; ⁴Ghent University, Belgium

2:50pm - 3:05pm

Experimental assessment of the lumped lithium-ion battery model

Tanilay Özdemir, Ali Amini, Özgür Ekici, Murat Köksal

Hacettepe University, Turkey

3:05pm - 3:20pm

Effect of inserted sphere size on heat transfer characteristics of FCC structured pebble bed in a HTGR

LeiSheng Chen¹, JaeYoung Lei²

¹Shaanxi University of Science & Technology, China; ²Handong Global University, Pohang, South Korea

3:20pm - 3:35pm

New method for determining the optimum fluid temperature when heating pressure thick-walled components with openings

Dawid Taler, Piotr Dzierwa, Jan Taler

Cracow University of Technology, Poland

3:35pm - 3:50pm

Comparison of the character of flow between the horizontal and vertical configuration of heating boiler draughts in low power heating boilers

Wojciech Judt, Bartosz Ciupek, Rafał Urbaniak

Chair of Thermal Engineering, Poznan University of Technology, Poland

3:50pm - 4:05pm

Numerical study of a heat transfer process in a heating boiler for solid fuel equipped with afterburning chamber

Wojciech Judt, Bartosz Ciupek, Rafał Urbaniak

Chair of Thermal Engineering, Poznan University of Technology, Poland

4:05pm - 4:20pm

Research on dynamic processes of molten carbonate fuel cells

Arkadiusz Szczęśniak, Jarosław Milewski, Wojciech Bujalski

Warsaw University of Technology, Poland

SE-12: Day 2 Session 12

Time: Wednesday, 04/Sep/2019: 2:20pm - 4:20pm · *Location:* Uniroma Tre

Session Chair: Janusz T. Cieslinski

2:20pm - 2:35pm

A numerical study on performance variation of transonic centrifugal impeller using a combination of flow cut and axial lift

Kun Sung Park, In Hyuk Jung, Sung Jin You, Seung Yeob Lee, Jin Taek Chung

Department of Mechanical Engineering, Korea University, Republic of Korea

2:35pm - 2:50pm

Effect of axial & radial clearance on the performance of a positive displacement hydraulic turbine

Arihant Sonawat¹, Hyeon-Mo Yang², Young-Seok Choi², Kyung Min Kim³, Jin-Hyuk Kim²

¹University of Science & Technology, Korea, Republic of (South Korea); ²Korea Institute of Industrial Technology, Korea, Republic of (South Korea); ³Korea District Heating Corporation, Korea, Republic of (South Korea);

2:50pm - 3:05pm

An experimental and numerical analysis of the fluid flow in a mechanically agitated vessel

Marek Jaszczur, Anna Młynarczykowska, Luana Demurtas

AGH University of Science and Technology, Poland

3:05pm - 3:20pm

Flow in a cylindrical cavity with a periodically rotating lid

Joshua David Selvaraj, Jordi Pallares Curto, Anton Vernet Pena, Francesc Xavier Grau Vidal

Universitat Rovirai Virgili, Spain

3:20pm - 3:35pm

Field synergy principle for natural convective rotating fluid flow past a vertical cylinder

H.P Rani¹, Koragoni Naresh¹, Y. Rameshwar²

¹National Institute of Technology, Warangal, India; ²University college of Engineering, Osmania University, Hyderabad, India

3:35pm - 3:50pm

Numerical simulation of optical clearing effect on the light propagation of skin tissue

Bin Chen, Jun Ma, Yue Zhang, Dong Li, Xu Sang

Xi'an Jiaotong University, China, People's Republic of

3:50pm - 4:05pm

Numerical model of biological tissue heating using the models of bio-heat transfer with delays

Ewa Majchrzak¹, Bohdan Mochnacki²

¹Silesian University of Technology, Poland; ²University of Occupational Safety Management, Katowice, Poland

4:05pm - 4:20pm

Numerical Problems on Surfaces: with or without Boundary, Subjected to Discrete Distributed Sources

Ofer Eyal, Ayelet Goldstein

Ort Braude College, Israel

SE-13: Day 2 Session 13

Time: Wednesday, 04/Sep/2019: 2:20pm - 4:20pm · Location: Uniroma Tre
Session Chair: Magdalena Piasecka

2:20pm - 2:35pm

Mixed Convective Heat Transfer From A Porous Cylinder In Steady Flow

Shimin Yu^{1,2}, Peng Yu¹

¹Department of Mechanics and Aerospace Engineering, Southern University of Science and Technology, Shen Zhen, China; ²Harbin Institute of Technology, Harbin, China

2:35pm - 2:50pm

Numerical investigation of heat loss through cascaded cavity receiver at high temperatures up to 500 C

Kushal S Wasankar¹, Shreyas C Yadav¹, Ramola Sinha^{1,2}, Nitin P Gulhane¹

¹Veermata Jijabai Technological Institute, Mumbai, India; ²K J Somaiya College of Engineering, Mumbai, India

2:50pm - 3:05pm

Computational study of a laminar natural convection inside adiabatic channel with ribs

Khalil Farhan Yassin¹, Ali Lafta Ekaid², Viktor Ivanovich Terekhov³

¹Al-Hawija Technical Institute, Northern Technical University, Iraq; ²Mechanical Engineering Dept., University of Technology, Baghdad, Iraq; ³Kutateladze Institute of Thermophysics, SB RAS, Novosibirsk, Russia

3:05pm - 3:20pm

Numerical simulation of unsteady channel flow with a moving indentation

Chandrakant Rameshchandra Sonawane¹, Yogesh B More¹, J C Mandal², AnandKumar Pandey¹

¹Symbiosis International University, India, India; ²Indian Institute of Technology Bombay, Mumbai

3:20pm - 3:35pm

A temporally piecewise SBFEM adaptive method to solve hyperbolic heat problems with radiative boundary conditions

Bicheng Liu, Yiqian He, Haitian Yang, Chunjiang Ran

Dalian University of Technology, China, People's Republic of

3:35pm - 3:50pm

Relaminarization of a hot air impingement on a flat plate

Mongkol Kaewbumrung¹, Chalermpol Plengsa-ard²

¹Rajamangala University of Technology Suvarnabhumi, Thailand; ²Kasetsart University, Thailand

3:50pm - 4:05pm

Utilization of hydraulic energy in a fish farm

Sang-Ho Suh¹, Md Rakibuzzaman¹, Young Tae Ryu², Kyung Yup Kim³

¹Department of Mechanical Engineering, Soongsil University, Seoul, Korea; ²1113, Jugok-ri, Ujeong-eup, Hwaseong-si, Gyeonggi-Do, Korea; ³Department of Mechanical Engineering, Korea Polytechnic University, Gyeonggi-Do, Korea

4:05pm - 4:20pm

Studying the impact of an inhomogeneous participating medium in a coupled convection-radiation system using finite element based methods

Jorge Avalos-Patino, Stephen Neethling, Steven Dargaville, Matthew Piggott

Imperial College London, United Kingdom

SE-14: Day 2 Session 14

Time: Wednesday, 04/Sep/2019: 2:20pm - 4:20pm · Location: Uniroma Tre
Session Chair: Piotr Łapka

2:20pm - 2:35pm

A systematic performance comparison of finite-volume and spectral-hp methods for LES of a representative combustor geometry

Vishal Saini, Hao Xia, Gary J. Page
Loughborough University, United Kingdom

2:35pm - 2:50pm

Prediction of raceway shape in zinc smelting furnace under the different air inflating conditions

Robert Straka, Mikołaj Bernasowski, Arkadiusz Klimczyk, Ryszard Stachura, Dmytro Svyetlichnyy
AGH University of Science and Technology, Poland

2:50pm - 3:05pm

Numerical investigation of the impact of variable particle radiation properties on the heat transfer in a high ash pulverized coal boiler through co-simulation

Ryno Laubscher¹, Pieter Gerhardus Rousseau²

¹University of Cape Town, South Africa; ²University of Cape Town, South Africa

3:05pm - 3:20pm

Investigation into the mechanisms of deflagration-to-detonation transitions using direct numerical simulations

Dr Weiming Liu, Dr Jonathan Francis, Dr Akinola Adeniyi, Joseph Owede Adoghe
University of Central Lancashire, Preston, United Kingdom, United Kingdom

3:20pm - 3:35pm

Influence of the expression used to account for the heat conduction flux when modeling the laser-induced incandescence of soot aggregates produced in a turbulent flame of Diesel

Sebastien Menanteau¹, Romain Lemaire²

¹ICAM, Lille, France; ²TFT laboratory, Department of Mechanical Engineering, École de Technologie Supérieure, Montréal, Canada

3:35pm - 3:50pm

Analysis of combustion, heat and fluid flow in a biomass furnace

Björn Pfeiffelmann¹, Michael Diederich¹, Fethi Gül¹, Ali Cemal Benim¹, Markus Heese², Andreas Hamberger²

¹Duesseldorf University of Applied Sciences, Germany; ²Endress Holzfeuerungsanlagen, Burgbernheim, Germany

3:50pm - 4:05pm

Numerical analysis of the combustion of straw and wood in a stoker boiler with vibrating grate

Rafal Kobylecki¹, Robert Zarzycki¹, Mateusz Winski², Zbigniew Bis¹

¹Czestochowa University of Technology, Poland; ²Energa Kogeneracja, Poland

4:05pm - 4:20pm

Entropy generation in an unsteady reactive viscous flow in a porous cylindrical pipe with an isothermal wall

Philip Iyiola Farayola

Emmanuel Alayande College of Education, Oyo. Oyo State. Nigeria

KEY-03: Keynote Session 3

Time: Thursday, 05/Sep/2019: 9:00am - 11:00am · Location: Uniroma Tre

Session Chair: Francesco Asdrubali

9:00am - 10:00am

Heat transfer enhancement in confined impinging jets with nanofluids and metal foams

Oronzio Manca

Università degli Studi della Campania "Luigi Vanvitelli", Italy

10:00am - 11:00am

Advanced computational transport phenomena models for design innovations in process industries

Krishnaswamy Nandkumar

Louisiana State University, United States of America

SE-15: Day 3 Session 15

Time: Thursday, 05/Sep/2019: 11:20am - 1:20pm · Location: Uniroma Tre

Session Chair: Aldo Fanchiotti

11:20am - 11:35am

DNS study of turbulent elliptical pipe flow under spanwise system rotation

Rafael Hurtado Rosas, Zhao-Ping Zhang, Bing-Chen Wang

Univ. of Manitoba, Canada

11:35am - 11:50am

Numerical analysis of influence of the nozzle shape on the flash boiling phenomena

Piotr Łapka¹, Mirosław Sereżyński¹, Andrzej Grzebielec¹, Adam Szelągowski¹, Mateusz Śmiechowicz², Emil Gromadzki²

¹Warsaw University of Technology, Faculty of Power and Aeronautical Engineering, Poland; ²Eneon sp. z o.o., Poland

11:50am - 12:05pm

Variable temperature effects on teg performance

Björn Pfeiffelmann¹, Cansu Özman¹, Ali Cemal Benim¹, Franz Joos²

¹Duesseldorf University of Applied Sciences, Germany; ²Helmut Schmidt University, Hamburg, Germany

12:05pm - 12:20pm

Hygrothermal behavior of polystyrene concrete under cyclic solicitations

Maroua Maaroufi¹, Kamilia Abahri², Fares Bennai¹, Rafik Belarbi¹

¹University of La Rochelle, LaSIE UMR CNRS 7356, France; ²LMT, ENS Cachan, CNRS, Université Paris-Saclay, France

12:20pm - 12:35pm

Unsteady disposable flow tracking using Discrete Phase Model

Monika Alicja Zielińska, Adam Sitko

ABB. Sp.z.o.o. Corporate Research Center, Poland

12:35pm - 12:50pm

Comparison between 1-D and grey-box models of a SOFC

Ramin Moradi¹, Andrea Di Carlo², Federico Testa¹, Luca Del Zotto³, Enrico Bocci⁴, Emanuele Habib¹

¹Sapienza University of Rome, Italy; ²University of L' Aquila, Italy; ³Universita Telematica e-Campus, Italy; ⁴Marconi University, Italy

12:50pm - 1:05pm

Investigation of forced convection heat transfer from a heater mounted in a cavity wall using various nanofluids

Rajesh Kanna¹, Sayed Sayeed Ahmad¹, P. Venkata Reddy², Chithirai Pon Selvan³, Jan Taler⁴, Dawid Taler⁵, Paweł Ocloń⁴, Andrea Vallati⁶, David Santosh Christopher⁷

¹College of Engineering and Computing, Al Ghurair University, United Arab Emirates; ²Department of Mechanical Engineering, Amity University, Dubai, UAE; ³School of Science and Engineering, Curtin University Dubai, UAE.; ⁴Institute of Thermal Power Engineering, Cracow University of Technology, Kraków, Poland; ⁵Faculty of Environmental Engineering, Cracow University of Technology, 31-864 Kraków, Poland; ⁶DIAEE Sapienza University of Rome, Italy; ⁷Department of Mechanical Engineering, Wolaita Soda University, Ethiopia

1:05pm - 1:15pm

Hall effect on steady mhd flow and heat transfer of a viscous fluid in a rectangular channel with suction and injection

Venkata Ramana Murthy Josyula, Pavankumar Reddy Muduganti

National Institute of Technology Warangal, India;

SE-16: Day 3 Session 16

Time: Thursday, 05/Sep/2019: 11:20am - 1:20pm · *Location:* Uniroma Tre

Session Chair: Artur Maciag

11:20am - 11:35am

Computational performance analysis of an airborne rotor-type electricity generator wind turbine

Doğan Güneş, Ercin Kükrer, Tolga Aydoğdu

Istanbul Bilgi University, Turkey

11:35am - 11:50am

Identification of the air gap thermal resistance in the model of binary alloy solidification including the macrosegregation and the material shrinkage phenomena

Edyta Hetmaniok, Adam Zielonka, Damian Słota

Institute of Mathematics, Silesian University of Technology, Poland

11:50am - 12:05pm

Large eddy simulation of high atwood number rayleigh-taylor mixing

Ilyas Yilmaz

Istanbul Bilgi University, Turkey

12:05pm - 12:20pm

Numerical Investigation into Heavy Gas Dispersion in the Atmosphere with Obstacles

Abdullah Saad Alakalabi, Dr Weiming Liu

University of Central Lancashire - UCLan, United Kingdom

12:20pm - 12:35pm

Numerical analysis on the influence of vane angle and droplet size of swirlvane steam separator for nuclear power generation

Junho Jeon: Hongwu Zhao, Yeonggyu Park, Nanjundan Parthasarathy, Yeonwon Lee

Pukyong National University

12:35pm - 12:50pm

Computational study of curved underbody diffusers

Angel Humnic, Gabriela Humnic

Transilvania University of Brasov, Romania

12:50pm - 1:05pm

Numerical study on the gas flow based on top-hat flow field near the jet flow region

Han Zhang, Li Jia

Beijing Jiaotong University, China

SE-17: Day 3 Session 17

Time: Thursday, 05/Sep/2019: 11:20am - 1:20pm · *Location:* Uniroma Tre

Session Chair: Rafal Kobylecki

11:20am - 11:35am

Validation methods of geometric 3D-CityGML data for urban wind simulations

Younis Saeedrashed, Ali Cemal Benim

Düsseldorf University, Germany

11:35am - 11:50am

Numerical Simulation of different pollution sources in an Urban Environment

Gonzalo Fernandez Bartaburu, Nicolas Rezzano, Mauro D'Angelo, Mariana Mendina
Facultad de Ingeniería, Universidad de la República, Uruguay

11:50am - 12:05pm

Prediction of flow and dispersion in cross ventilated buildings

Ali Cemal Benim, Ali Nahavandi
Duesseldorf University of Applied Sciences, Germany

12:05pm - 12:20pm

Modelling of random packed fixed-beds reflecting different loading strategies for detailed-CFD simulations

Ginu George, Steffen Flaischlen, Gregor Wehinger
Clausthal University of Technology, Germany

12:20pm - 12:35pm

Numerical study of Karman vortex of electrically conducting fluids around circular and rounded square cylinders under magnetic fields induced by electric current

Jong Hui Lee, Il Seouk Park
kyungpook national university, Korea, Republic of (South Korea)

12:35pm - 12:50pm

Experimental and analytical evaluation of a gas liquid energy storage (GLES) prototype

Andrea Vallati¹, Riccardo Stasio², Gabriele Battista², Roberto de Lieto Vollaro², Chiara Colucci¹, Paweł Octoń³
¹"Sapienza" University of Rome, Italy; ²University of Roma Tre, Italy; ³Cracow University of Technology, Poland

12:50pm - 1:05pm

Numerical modelling of the fluid flow and the heat transfer during food freezing with the hydrofluidisation method

Michał Stebel, Jacek Smolka, Michał Palacz, Wojciech Adamczyk, Edyta Piechnik
Silesian University of Technology, Poland

SE-18: Day 3 Session 18

Time: Thursday, 05/Sep/2019: 11:20am - 1:20pm · *Location:* Uniroma Tre
Session Chair: Lucia Fontana

11:20am - 11:35am

Modeling and simulation of closed low-pressure adsorbers for thermal energy storage

Micha Schaefer¹, André Thess^{1,2}
¹University of Stuttgart, Germany; ²German Aerospace Center (DLR)

11:35am - 11:50am

European Building Resilience To The Climate Change

Virgilio Ciancio¹, Ferdinando Salata¹, Iacopo Golasi¹, Serena Falasca², Pieter De Wilde³, Massimo Coppi¹
¹University of Rome 'Sapienza', Italy; ²University of Urbino, Italy; ³University of Plymouth, UK

11:50am - 12:05pm

Performance analysis of a water ejector using CFD simulations and mathematical modeling

Victor Jorge de Oliveira Marum, Livia Bueno Reis, Felipe Silva Maffei, Shahin Ranjbarzadeh, Ivan Korkischko, Rafael dos Santos Gioria, Júlio Romano Meneghini
Polytechnic School of the University of São Paulo

12:05pm - 12:20pm

Thermal performance analysis of a residential house equipped with Phase Change Material

Gounni Ayoub, Louahlia Hasna
Univ Unicaen Lusac, France

12:20pm - 12:35pm

Cooling load and noise characterization modeling for photovoltaic driven building integrated thermoelectric cooling devices

Himanshu Dehra

Egis Group, India

12:35pm - 12:50pm

Influence of broken twisted tape on heat transfer performance in novel triangular axial corrugated tubes: experimental and numerical study

Suvanjan Bhattacharyya¹, Arnab Banerjee², Ali Cemal Benim³, Rachid Bennacer⁴

¹University of Pretoria, South Africa; ²MCKV Institute of Engineering, India; ³University of Applied Sciences, Germany;

⁴Université Paris Saclay, France.

12:50pm - 1:05pm

Multiobjective optimization of underground power cable systems

Paweł Ocloń¹, Monika Rerak¹, Ravipudi Venkata Rao², Piotr Cisek¹, Andrea Vallati³, Jarosław Król¹

¹Cracow University of Technology, Poland; ²Sardar Vallabhbhai National Institute of Technology Surat, India; ³University of Rome, Italy

SE-19: Day 3 Session 19

Time: Thursday, 05/Sep/2019: 2:20pm - 4:20pm · *Location:* Uniroma Tre

Session Chair: Krishnaswamy Nandkumar

2:20pm - 2:35pm

The numerical simulation of compressible jet at low reynolds number using OpenFOAM

Kraposhin Matvey^{1,2,4}, Andrey Epikhin^{2,3}, Kirill Vatutin²

¹Keldysh Institute of Applied Mathematics of the RAS; ²Ivannikov Institute for System Programming of the RAS; ³Bauman Moscow State Technical University; ⁴Department of Aeromechanics and Flight Engineering of MIPT

2:35pm - 2:50pm

Thermal design optimization of the pcb through area reduction

Cristina Mihaela Dragan^{1,2}, Dorin Lelea¹

¹University Politehnica Timisoara Romania; ²Continental Automotive Romania

2:50pm - 3:05pm

Multi-objective analysis of an influence of a geothermal water salinity on optimal operating parameters in low-temperature ORC power plant

Marcin Jankowski, Sławomir Wiśniewski, Aleksandra Borsukiewicz

West Pomeranian University of Technology, Poland

3:05pm - 3:20pm

A comprehensive thermal and structural transient analysis of a boiler's steam outlet header by means of a dedicated algorithm and FEM simulation

Marcin Pilarczyk¹, Bohdan Węglowski², Lars Nord¹

¹Norwegian University of Science and Technology, Norway; ²Cracow University of Technology, Poland

3:20pm - 3:35pm

Flow rate maximization for an electromagnetic fan using a frequency modulation chip

Hsienchin Su

Dastrong Corp, China, People's Republic of

3:35pm - 3:50pm

Numerical simulation of the aerodynamic unsteady loads on the tail fin of a maneuverable aircraft

Andrey Epikhin^{1,2}, Vladimir Kalugin¹

¹Bauman Moscow State Technical University; ²Ivannikov Institute for System Programming of the RAS

3:50pm - 4:05pm

Turbine start-up optimization under the power unit cyclic operating conditions

Andrzej Rusin, Grzegorz Nowak, Henryk Łukowicz, Martyna Tomala
Silesian University of Technology, Poland

4:05pm - 4:20pm

Analyses of heat pump system as an energy efficient alternative of resistance heater for a household appliance: an applicability aspect

Erkan Kutuk, Ozgur Bayer
Middle East Technical University, Turkey

SE-20: Day 3 Session 20

Time: Thursday, 05/Sep/2019: 2:20pm - 4:20pm · *Location:* Uniroma Tre
Session Chair: Bujalski Wojciech

2:20pm - 2:35pm

Swirled Injector modelling for cavitating multiphase Flow

Bartosz Ziegler¹, Jędrzej Mosiężny², Natalia Lewandowska³
¹Poznan University of Technology; ²Poznan University of Technology; ³Poznan University of Technology

2:35pm - 2:50pm

Shrinkage induced flow and free surface evolution during solidification of pure metal

Aniket Dilip Monde¹, Anirban Bhattacharya², Prodyut Ranjan Chakraborty¹
¹Indian Institute of Technology Jodhpur, India; ²Indian Institute of Technology Bhubaneswar, India

2:50pm - 3:05pm

Analysis of the equilibrium and non-equilibrium models of moisture transport in a wet brick.

Mirosław Seredyński, Michał Wasik, Piotr Furmański, Piotr Łapka, Łukasz Cieślíkiewicz, Karol Pietrak, Michał Kubiś, Tomasz S. Wiśniewski
Warsaw University of Technology, Poland

3:05pm - 3:20pm

Analysis of the thermodynamic performance of the liquid-vapor separation condenser based on the condensate growth model in horizontal tubes

Ce Liu, Li Jia, Zhang Han
Beijing Jiaotong University, China

3:20pm - 3:35pm

Effect of the flow velocity on bubble boiling characteristics

Anatoliy Levin, Polina Khan
Melentiev Energy Systems Institute SB RAS, Russian Federation

3:35pm - 3:50pm

Application of a fast transonic trajectory determination approach in 1-D modelling of steady-state transonic two-phase carbon dioxide flow

Wojciech Angielczyk, Dariusz Butrymowicz, Kamil Śmierciew
Białystok University of Technology, Poland

3:50pm - 4:05pm

Green's function method for solving the separated two-phase flow in inclined tubes with driving force contributions

Ayelet Goldstein, Ofer Eyal
ORT-Braude college, Israel

4:05pm - 4:20pm

Numerical simulations and analyses of flow rate exchange between accumulator and main loop

Qingliang Meng, Zhenming Zhao, Huandong Zhang
Beijing Institute of Space Mechanics & Electricity, China, People's Republic of

SE-21: Day 3 Session 21

Time: Thursday, 05/Sep/2019: 2:20pm - 4:20pm · Location: Uniroma Tre
Session Chair: Sławomir Pietrowicz

2:20pm - 2:35pm

Selected cases of heat transfer phenomena on the shock waves in atmospheric air

Andrzej Tadeusz Wilk, Sławomir Dykas
Silesian University of Technology, Poland

2:35pm - 2:50pm

Heterogeneous Computing (CPU-GPU) for pollution dispersion in an Urban Environment

Gonzalo Fernandez Bartaburu, Mariana Mendina, Gabriel Usera
Facultad de Ingeniería, Universidad de la República, Uruguay

2:50pm - 3:05pm

Numerical investigation of pipelines modeling in solar combined heating and power plant

Roberto Tascioni^{1,2}, Alessia Arteconi^{2,3}, Luca Del Zotto^{2,4}, Emanuele Habib¹, Enrico Bocci⁴, Ramin Moradi¹, Khamid Mahkamov⁵, Carolina Costa⁵, Luisa F. Cabeza⁶, Alvaro de Gracia^{6,7}, Piero Pili⁸, André C. Mintsas⁹, Matteo Pirro¹⁰, Toni Gimbernat¹¹, Teresa Botargues¹², Elvedin Halimick¹³, Luca Cioccolanti²

¹Sapienza University of Rome, Italy; ²Università Telematica eCampus, Italy; ³Università Politecnica delle Marche, Italy; ⁴Università degli Studi Guglielmo Marconi, Italy; ⁵Northumbria University, UK; ⁶Universitat de Lleida, Spain; ⁷University of Perugia, Italy; ⁸Elianto S.R.L., Italy; ⁹Enogia S.A.S, France; ¹⁰S.TRA.TE.G.I.E. srl, Italy; ¹¹SINAGRO ENGINYERIA S.L.P, Spain; ¹²USER FEEDBACK PROGRAM SL, Spain; ¹³AAVID Thermacore Europe, UK

3:05pm - 3:20pm

Numerical method for generalized constitutive laws

Robert Kovacs
Budapest University of Technology and Economics, Hungary

3:20pm - 3:35pm

Coupled system of boundary value problems by galerkin method with cubic b splines

K.N.S. Kasi Viswanadham
National Institute of Technology, Warangal, India, India

3:35pm - 3:50pm

Prediction of roughness effects on wind turbine aerodynamics

Ali Cemal Benim, Micheal Diederich
Duesseldorf University of Applied Sciences, Germany

3:50pm - 4:05pm

A low-storage Runge-Kutta OpenFOAM solver for compressible low-Mach numbers flows: aeroacoustic and thermo-fluid dynamic applications

Valerio D'Alessandro¹, Matteo Falone¹, Luca Giammichele¹, Sergio Montelpare²
¹Università Politecnica delle Marche, Italy; ²Università degli Studi "G. d'Annunzio" di Chieti-Pescara

4:05pm - 4:20pm

Performance improvement of air amplifier using the response surface method

Myoungwoo Lee¹, Yo-Hwan Kim¹, Youn-Jea Kim²

¹Graduate School of Mechanical Engineering, Sungkyunkwan University; ²School of Mechanical Engineering, Sungkyunkwan University

SE-22: Day 3 Session 22

Time: Thursday, 05/Sep/2019: 2:20pm - 4:20pm · Location: Uniroma Tre
Session Chair: Oronzio Manca

2:20pm - 2:35pm

CFD analysis of phase change behavior of phase change material encapsulated in internally finned spherical capsule

Kumaresan G¹, Santosh R¹, Revanth H², Raju G², Bhattacharyya S³

¹Anna University, India; ²Global Nodes Engineering Solutions (P) Ltd, India; ³University of Pretoria, South Africa

2:35pm - 2:50pm

Simple convective and radiative heat exchanger model for process modelling

Wilhelm Franz Fuls

University of Cape Town, South Africa

2:50pm - 3:05pm

Determination of Nusselt Numbers and Euler Numbers in Depending on Reynolds Numbers for the Compact Tube Bundle of Small Diameter Tubes by Experimental and Numerical Methods of Researches

Valery Gorobets¹, Yurii Bohdan², Viktor Trokhaniak¹, Ievhen Antypov¹, Mykola Masiuk¹

¹National University of Life and Environmental Sciences of Ukraine; ²Kherson State Maritime Academy

3:05pm - 3:20pm

Comparison of 2D and 3D modeling methodologies for flat-grooved heat pipes

Gökay Gökçe^{1,2}, Oğuz Altunkas³, Barbaros Çetin³, Zafer Dursunkaya¹

¹Middle East Technical University, Turkey; ²ASELSAN A.Ş., Turkey; ³Bilkent University, Turkey

3:20pm - 3:35pm

Disjoining Pressure Instigated Slope Break of a Condensing Film in a Fin-Groove Corner

Osman Akdag¹, Yigit Akkus¹, Zafer Dursunkaya²

¹ASELSAN Inc., Turkey; ²Middle East Technical University, Turkey

3:35pm - 3:50pm

Study on characteristics of heat transfer and flow resistance in porous foam metal

Aiqiang Chen, Sizhong Gu, Lin Chai, Ruonan Wang, Georges El Achkar, Bin Liu

Tianjin University of Commerce, People's Republic of China

3:50pm - 4:05pm

Investigation of the Effects of Vortex Generator in Improving the performance of Heat Pipes

Ali Tarokh

lakeheadUniversity, Canada

SE-23: Day 4 Session 23

Time: Friday, 06/Sep/2019: 9:00am - 11:00am · *Location:* Uniroma Tre

Session Chair: Pieter Rousseau

9:00am - 9:15am

Identification of improper use of boilers under real operating conditions.

Adam Nygard, Jarosław Bartoszewicz

Poznan University of Technology, Poland

9:15am - 9:30am

Experimental and numerical analysis of a bubbling fluidized bed gasifier for renewable energy production

Anna Prati¹, Francesco Selmo², Alessandra Nigro¹, Marco Baratieri¹, Michele Larcher¹

¹Free University of Bozen, Italy; ²University of Trento, Italy

9:30am - 9:45am

Protection by noise in quarrying activities : test methods comparison of the hearing protection devices efficiency

Guido Alfaro Degan¹, Gianluca Coltrinarì¹, Dario Lippiello¹, Pietro Nataletti², Diego Annesi²

¹Roma Tre University, Italy; ²INAIL, Italy

9:45am - 10:00am

Full and simplified set of dimensionless parameters for fluidized bed hydrodynamic scaling: preliminary simulations

Francesco Selmo¹, Anna Prati², Alessandra Nigro², Marco Baratieri², Michele Larcher²

¹University of Trento, Italy; ²Free University of Bozen, Italy

10:00am - 10:15am

Motion process of horizontal particles laden jet flow

Tooran Tavangar¹, Hesam Tofighian², Ali Tarokh³

¹Lakehead university, Canada; ²Mechanical Engineering Dept., Amirkabir University of Technology, Tehran, Iran;

³Mechanical Engineering Dept., Lakehead University, Thunder Bay, ON, Canada

10:15am - 10:30am

Effect of droplet superficial velocity on mixing efficiency in liquid-liquid droplet flow

Xiao-juan Li¹, Chang Qiu¹, Zan Wu², Jin-yuan Qian^{1,2,3}, Bengt Sundén²

¹Institute of Process Equipment, Zhejiang University, China; ²Department of Energy Sciences, Lund University, Sweden;

³State Key Laboratory of Fluid Power and Mechatronic Systems, Zhejiang University, China

SE-24: Day 4 Session 24

Time: Friday, 06/Sep/2019: 9:00am - 11:00am · *Location:* Uniroma Tre

Session Chair: Miroslaw Seredyński

9:00am - 9:15am

Response of viscoelastic fluid flow in micro cross-slot channel to external stimulation

Chao Yuan, Hong-Na Zhang, Xiao-Bin Li, Feng-Chen Li

Sun Yat-Sen University, China

9:15am - 9:30am

Parametric numerical investigations of a cooling of a hot plate by an array of microjets

Piotr Łapka, Adrian Ciepliński

Warsaw University of Technology, Faculty of Power and Aeronautical Engineering, Institute of Heat Engineering, Poland

9:30am - 9:45am

Effect of magnetic field on bifurcation in natural convection through horizontal annulus

Muhammad Usman, Il Seouk Park

Kyungpook National University, Korea, Republic of (South Korea)

9:45am - 10:00am

Noise reduction of extinguishing nozzle using response surface method

Yo-Hwan Kim, Myoungwoo Lee, Youn-Jea Kim

Sungkyunkwan University, Republic of (South Korea)

10:00am - 10:15am

Uncertainty quantification of film cooling performance of an industrial gas turbine vane

Andrea Gamannossi¹, Alberto Amerini², Lorenzo Mazzei², Tommaso Bacci², Matteo Poggiali², Antonio Andreini²

¹Department of Engineering and Architecture, University of Parma, Via Università 12, Parma – 43121, Italy; ²Department of Industrial Engineering, University of Florence, Via S. Marta 3, Firenze – 50139, Italy

10:15am - 10:30am

Conjugate heat transfer analysis using a weak arbitrary grid interface

Mehmet Shala

Ricardo UK Ltd, United Kingdom

SE-25: Day 4 Session 25

Time: Friday, 06/Sep/2019: 9:00am - 11:00am · Location: Uniroma Tre

Session Chair: Tadeusz Wójcik

9:00am - 9:15am

Prediction of heat and fluid flow in microchannel condensation

Anil Basaran², Ali Cemal Benim¹, Ali Yurddas²

¹Duesseldorf University of Applied Sciences, Germany; ²Celal Bayar University, Manisa, Turkey

9:15am - 9:30am

A 2D-numerical study on slot jet applied to a wind turbine as a circulation control technique

Ivano Petracci¹, Luca Manni², Matteo Angelino³, Sandra Corasaniti¹, Fabio Gori¹

¹Department of Industrial Engineering, University of Rome "Tor Vergata", Via del Politecnico 1, 00133 Rome, Italy; ²Cecom srl, Via Tiburtina, km 18,700, 00012 Guidonia Montecelio, Rome, Italy; ³Loughborough University, Aeronautical and Automotive Engineering, Stewart Miller Building, Loughborough LE11 3TU, UK

9:30am - 9:45am

Modeling of dendrite growth in undercooled solution sodium acetate trihydrate

Chanchal Kumar², Aniket Dilip Monde¹, Anirban Bhattacharya³, Prodyut Ranjan Chakraborty¹

¹IIT Jodhpur, India; ²Defence Laboratory, DRDO Jodhpur, India; ³Department of Mechanical Engineering, IIT Bhubaneswar, India

9:45am - 10:00am

Modelling of membrane transport in a regenerative hydrogen-vanadium fuel cell

Catalina A. Pino-Muñoz, Nigel P. Brandon

Imperial College London, United Kingdom

10:00am - 10:15am

Heat Shield in the Fairing of a Launcher

Sandra Corasaniti¹, N Di Stefano¹, Luca Manni², Ivano Petracci¹, Fabio Gori¹

¹University of Rome "Tor Vergata", Italy; ²CECOM s.r.l., Italy

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