

**JETC
2017**

**THERMODYNAMICS
CONFERENCE - MAY 21-25
2017 - BUDAPEST, HUNGARY**



**PROGRAMME
BOOK**

WELCOME

Welcome in JETC, welcome in Budapest!

JETC is a conference series devoted entirely to thermodynamics. Methods and concepts of equilibrium and non-equilibrium thermodynamics appear in various areas of physics, engineering, sciences and humanities. This wide range of applicability is a source of inspiration, but also a cause of separation and divergence. Thermodynamics is the only true holistic physical theory: it is multidisciplinary by definition. The broad range of related fields is a power and also a burden. It is a power, because with thermodynamic knowledge one may contribute to all related disciplines. It is a burden, because thermodynamic aspects are not always considered important in a specific subdiscipline and the disciplinal differences develop different branches of thermodynamics. Sooner or later without communication understanding becomes problematic. The aim of this conference is to improve the interaction and pull together the various application areas and theoretical branches in order to develop thermodynamics more powerful and more applicable.

Therefore we try to enhance the power and lighten the burden with particular organization ideas. These are:

- Coffee breaks are organized among the posters, providing a pleasant and inspiring environment of scientific discussions,
- One participant may bring several posters. This way it is easy to show several different research lines and results.
- A part of the conference is organized in the form of Minisymposia, where a chosen field is shortly surveyed by invited experts and then these experts are extensively questioned by the audience. This way new areas are introduced shortly and interestingly: the best way to broaden our knowledge in a new field.

We wish everybody an interesting and useful conference.

Peter Ván and Gyula Gróf

in the name of the Local Organizing Committee

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GENERAL INFORMATION

Conference Venue

BME Q Building

Address: H-1117 Budapest, Magyar tudósok körútja 2.

47.473458, 19.060180

Registration fee	After 15 March
Participant	450 EUR
Student	350 EUR

Incl.: 27% VAT, access to the scientific sessions, coffee breaks, lunches and welcome reception, program book and MS abstract publication, congress bag

Registration Desk

Opening hours:

21 May (Sunday) 16:30 – 20:00

22 May (Monday) 07:45 – 17:00

23 May (Tuesday) 07:45 – 17:00

24 May (Wednesday) 07:45 – 17:00

25 May (Thursday) 07:45 – 13:00

Oral Presentation

Please hand over your lecture (pen-drive, CD-ROM) to the technician in the conference or session room before the beginning of the actual session. Standard audio-visual equipment will be provided. Please check the exact timing of your presentation in the Program book since the time limit will be strictly kept.

Poster Presentation

You are requested to mount your poster in the morning of 22 May (Monday) and to remove it latest until 12:00 on 25 May (Thursday). Posters left on the poster boards after this time will be removed and will not be stored.

Adhesive, etc. for poster affixation will be provided. During the Poster Session authors of posters are requested to be present at their posters at the time specified in the program.

Poster size: 90 x 120 cm, portrait

Badge

Participants will receive a badge upon registration. Since your personal badge entitles you to enter the sessions, please make sure that you wear your badge at all times during all conference activities and social events.

Lunches

Two-course lunch will be served for registered participants in the conference building every day during lunch breaks. It is included in the registration fee however participants will receive lunch tickets at the registration desk since lunch will be provided only against these tickets.

Public Transport in Budapest

Public transport in the city is well-organized. Trams, buses and metro lines operate without conductors. Tickets must be purchased in advance at tobacco shops, newsstands, metro stations or at vendor machines at some tram and bus stops. Weekly and Tourist (valid for 3 day) passes allowing free travel on all means of transportation within the city limits and can be bought at each metro station.

Taxis

Taxis are yellow in Budapest. We suggest that you use only taxis equipped with a taximeter, e.g. Főtaxi, City Taxi, Taxi5, TaxiPlus or Buda Taxi. Beware of private cabs, especially those without a taximeter.

Parking

Parking in the central districts of Budapest is available against a fee. You need to purchase a parking ticket from the vending machines on the streets. Only HUF coins are accepted.

Notice for Drivers (Zero Alcohol)

Drivers should be aware that there is a zero tolerance of blood alcohol level while driving in Hungary.

Insurance

The Organizing Committee cannot assume responsibility for injuries or losses occurring to persons or personal belongings during the Conference. Participants are therefore advised to travel with a valid insurance package.

SOCIAL PROGRAMS

Welcome Party (21 May, Sunday 19:00)

Get-together party will be held for all registered participants at the conference venue.
Price: included in the registration fee

Banquet Dinner (23 May, Tuesday 20:00)

Banquet Dinner of the Conference will take place on board of a Danube boat. Join us to experience the most beautiful illuminated sights of Budapest from the blue highway of our capital, while an atmospheric banquet dinner will guarantee superb entertainment for this evening.

It will be venue of the Prigogine prize ceremony as well.

Participants are kindly requested to gather at the main entrance of the conference building at 19:15. Departure from the building to the buses at 19:25.

Price: 60 EUR/person

Optional Sightseeing Programs

Participants of the meeting have the possibility to join to several sightseeing tours in Budapest or at the countryside. Prices of the following tours include also a **pick up service** 30 minutes before the departure time.

Grand City Tour

Departure: at 10:00 or 11:00 or 14:30

Duration: 3 hours

Price: 25 EUR/person

Parliament visit

Departure: at 9:30 or 13:15

Duration: 1,5 hours

Attention! Passport or ID card is requested at entrance!

Price: EU citizens 25 EUR/person

non-EU citizens 37 EUR/person

Parliament and Grand City Tour

Departure at 9:30 or 13:15

Duration: 4,5 hours

Attention! Passport or ID card is requested at entrance!

Price: EU citizens 42 EUR/person

non-EU citizens 55 EUR/person

Szentendre & Visegrád Tour

Departure at 14:00

Duration: 4,5 hours

Price: 42 EUR/person

Royal Tour

Departure: at 9:00

Duration: 4 hours

Price: 36 EUR/person

Puszta Tour

Departure: at 9:00

Duration: 8 hours

Price: 65 EUR/person

Detailed information about the above sightseeing tours is available
at the Registration Desk.

Scientific program overview

Sunday, May 21	
16:30-19:00	Registration
19:00	Welcome party
Monday, May 22	
	Plenary room
08:30-10:30	Minisymph. A - Nonadditive thermodynamics
10:30-11:00	COFFEE + POSTER P01 - P17
11:00-13:00	Minisymph. F - Theories of nonequilibrium thermodynamics
13:00-14:30	LUNCH
	Plenary room
	Session room 1
14:30-16:30	Non-equilibrium thermodynamics of complex systems I.
	Session room 2
	Thermodynamics of granular media
16:30-17:00	COFFEE + POSTER P01 - P17
17:00-19:00	Kinetic theory and continua
Tuesday, May 23	
	Plenary room
08:30-10:30	Minisymph. C - Biothermodynamics
10:30-11:00	COFFEE + POSTER P18 - P32
11:00-13:00	Minisymph. H - Continuum thermomechanics
13:00-14:30	LUNCH
14:30-15:00	PRIGOGINE LECTURE
	Plenary room
	Session room 1
15:00-16:40	Small systems I: quantum thermodynamics
16:40-17:00	COFFEE + POSTER P18 - P32
	Session room 2
17:00-19:00	Thermodynamics in biology
	Thermomechanics
20:00	Banquet (Prigogine prize ceremony)

Wednesday, May 24	
	Plenary room
08:30-10:30	Minisym. E - Computational thermodynamics of phases and surfaces
10:30-11:00	COFFEE + POSTER P33 - P48
11:00-13:00	Minisym. G - Chemical thermodynamics
13:00-14:30	LUNCH
	Plenary room
14:30-16:30	Small systems II: quantum thermodynamics
	Session room 1
	Non-equilibrium thermodynamics of complex systems II.
16:30-17:00	COFFEE + POSTER P33 - P48
17:00-19:00	Chemical thermodynamics
	Entropy production minimization

Thursday, May 25	
	Plenary room
08:30-10:30	Minisym. B - Thermodynamics of quantum systems
10:30-11:00	COFFEE + POSTER
11:00-13:00	Minisym. D - Engineering thermodynamics
12:45-13:00	Closing of the Conference
13:00-14:30	LUNCH

DETAILED SCIENTIFIC PROGRAM

Sunday, 21 May

16:30 – 19:00 Registration

19:00 Welcome party

Monday, 22 May

Plenary Room

- 08:30 – 10:30** [Minisymposium A – Nonadditive thermodynamics](#)
Chair: Ván P.
- 08:30 – 08:45 **Rényi entropy rate under Lindblad equation**
[Abe Sumiyoshi](#)¹
¹*Mie University, Tsu, JAPAN*
- 08:45 – 09:00 **Looking at the Tsallis entropy in the eye**
[Bagci Gökhan Baris](#)¹, [Oikonomou Thomas](#)²
¹*TOBB University of Economics and Technology, Ankara, TURKEY;* ²*Nazarbayev University, Department of Physics, School of Science and Technology, Astana, KAZAKHSTAN*
- 09:00 – 09:15 **On the uniqueness theorem for pseudo-additive entropies**
[Jizba Petr](#)^{1,2}
¹*FNSPE, Czech Technical University in Prague, Prague, CZECH REPUBLIC;* ²*ITP, Freie Universitaet in Berlin, Physics, Berlin, GERMANY*
- 09:15 – 09:30 **Beyond the exponential statistical factor**
[Biro Tamas S](#)¹
¹*Wigner RCP of H.A.S., RMI Theory, Budapest, HUNGARY*
- 09:30 – 09:45 **News on non-Boltzmannian thermostistical systems**
[Tsallis Constantino](#)¹
¹*Centro Brasileiro de Pesquisas Fisicas, Rio de Janeiro, BRAZIL*
- 09:45 – 10:30 Plenary discussion
- 10:30 – 11:00 Coffee and **Posters P1 – P17**

- 11:00 – 13:00** **Minisymposium F – Theories of nonequilibrium thermodynamics**
Chair: Cimmelli V.A.
- 11:00 – 11:15 **Fluxes as thermodynamic variables: transport equations, equations of state, fluctuations**
Jou David¹
¹*Universitat Autònoma de Barcelona, Departament de Física, Bellaterra, SPAIN*
- 11:15 – 11:30 **Rate equations compatible with thermodynamics**
Morro Angelo¹
¹*University of Genoa, Genoa, ITALY*
- 11:30 – 11:45 **GENERIC: Review of successful applications and a challenge for the future**
Öttinger Hans Christian¹
¹*ETH Zürich, Department of Materials, Zürich, SWITZERLAND*
- 11:45 – 12:00 **General expression of entropy production based on thermomass theory**
Cao Bingyang¹, Yuan Dong¹, Zeng-Yuan Guo¹
¹*Tsinghua University, Department of Engineering Mechanics, Beijing, CHINA*
- 12:00 – 12:15 **Constitutive relations and maximum rate of entropy production in non-equilibrium processes**
Průša Vít¹
¹*Charles University, Faculty of Mathematics and Physics, Prague, CZECH REPUBLIC*
- 12:15 – 13:00 Plenary discussion
- 13:00 – 14:30 Lunch
- 14:30 – 16:30** **Non-equilibrium thermodynamics of complex systems I.**
Chair: Morro A.
- 14:30 – 14:50 **Weakly non local thermodynamics and generalized heat-transport equation**
Rogolino Patrizia¹
¹*University of Messina, Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, Messina, ITALY*

- 14:50 – 15:10 **Extended thermodynamics, effective elastic coefficients and magnetoelastic waves in superconducting layer**
Maruszewski Bogdan T¹, Starosta Roman¹, Jankowska Malgorzata¹
¹*Poznan University of Technology, Poznan, POLAND*
- 15:10 – 15:30 **Non-equilibrium processes in semiconductor crystals and superlattices defective by dislocations**
Restuccia Liliana¹, Jou David²
¹*University of Messina, Messina, ITALY*; ²*Universitat Autònoma de Barcelona, Barcelona, SPAIN*
- 15:30 – 15:50 **A thermodynamic theory on the interaction of thermal and diffusive effects in viscous fluid**
Ciancio Vincenzo¹, Palumbo Annunziata¹
¹*University of Messina, Dep. of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, Messina, ITALY*
- 15:50 – 16:10 **Vortex formation and second sound near the superfluid transition in liquid helium**
Saluto Lidia¹, Mongiovì Maria S¹, Jou David²
¹*Università degli studi di Palermo, Dipartimento di Innovazione Industriale e Digitale, Palermo, ITALY*; ²*Universitat Autònoma de Barcelona, Departament de Física, Bellaterra, SPAIN*
- 16:10 – 16:30 **Refrigeration of nanodevices by flowing superfluid helium**
Sciacca Michele^{1,2}, Jou David³, Galantucci Luca^{4,1}
¹*Istituto Nazionale di Alta Matematica, Roma, ITALY*; ²*Università di Palermo, Dipartimento di Scienze Agrarie e Forestali, Palermo, ITALY*; ³*Universitat Autònoma de Barcelona, Departament de Física, Bellaterra, SPAIN*; ⁴*Newcastle University, School of Mathematics and Statistics, Newcastle, UNITED KINGDOM*
- 16:30 – 17:00 Coffee + **Posters P1 – P17**

- 17:00 – 19:00** **Aspects of heat conduction**
Chair: Kiss L.
- 17:00 – 17:20** **Thermal response of macro to nanoscaled heat and electric charge conductor films to a pulsed electric signal**
Vazquez Federico¹, Figueroa Aldo², Rodríguez-Vargas Isaac³
¹*Morelos State University, Science Research Center, Cuernavaca, MEXICO*; ²*CONACYT-Morelos State University, Science Research Centre, Cuernavaca, MEXICO*; ³*Zacatecas Autonomous University, Physics Academic Unit, Zacatecas, MEXICO*
- 17:20 – 17:40** **Non-Fourier heat transfer in fluids under oscillating conditions**
Castillo-Romero Eder S.¹, del Río Jesús Antonio¹, Lopez de Haro Mariano^{1,2}
¹*Universidad Nacional Autonoma de Mexico, Temixco, MEXICO*; ²*Universidad de Extremadura, Departamento de Física e Instituto de Computación Científica Avanzada, Badajoz, SPAIN*
- 17:40 – 18:00** **A theoretical model for the thermal behavior of functionally graded sheets**
Ciarletta Michele¹, Sellitto Antonio¹, Tibullo Vincenzo²
¹*University of Salerno, Department of Industrial Engineering, Salerno, ITALY*; ²*University of Salerno, Department of Mathematics, Fisciano, ITALY*
- 18:00 – 18:20** **Exact solution of Guyer-Krumhansl heat equation by operational method**
Zhukovsky Konstantin¹
¹*M.V. Lomonosov Moscow State University, Faculty of Physics, Moscow, RUSSIA*
- 18:20 – 18:40** **Non-Fourier heat conduction at room temperature: experimental results**
Ván Péter¹, Fülöp Tamás², Gróf Gyula², Kovács Róbert², Lovas Ádám²
¹*MTA Wigner RCP, Theoretical Phys., Budapest, HUNGARY*; ²*Budapest University of Technology and Economics, Department of Energy Engineering, Budapest, HUNGARY*

Monday, May 22
Session Room 1

- 14:30 – 16:30** **Nonadditive thermodynamics**
Chair: Tsallis C.
- 14:30 – 14:50** **Negative temperature in gravitating systems**
Kocsis Bence¹, Roupas Zacharias¹, Tremaine Scott²
¹*Eotvos University, Institute of Physics, Budapest, HUNGARY;* ²*Institute for Advanced Study, Princeton, UNITED STATES*
- 14:50 – 15:10** **Non-extensive thermodynamics in high energy nuclear collisions**
Bíró Gábor^{1,2}, Barnaföldi Gergely Gábor¹, Bíró Tamás Sándor¹, Ürmösy Károly³, Takács Ádám²
¹*Wigner RCP of HAS, Budapest, HUNGARY;* ²*Eötvös Loránd University, Budapest, HUNGARY;* ³*Jan Kochanowski University, Kielce, POLAND*
- 15:10 – 15:30** **Non-extensive approach of the Hadron product in high-energy collisions**
Takács Ádám^{1,2}, Barnaföldi Gergely Gábor², Bíró Gábor^{1,2}
¹*Eötvös Loránd University, Budapest, HUNGARY;* ²*Wigner Research Center for Physics of the HAS, Budapest, HUNGARY*
- 15:30 – 15:50** **Maxent principle and the problem of the partition function**
Oikonomou Thomas¹, Bagci G. Baris²
¹*School of Science and Technology, Department of Physics, Nazarbayev University, Astana, KAZAKHSTAN;* ²*Department of Materials Science and Nanotechnology Engineering, TOBB University of Economics and Technology, Ankara, TURKEY*
- 15:50 – 16:10** **Jizba-Arimitsu hybrid entropy and its applications to thermodynamics and statistics**
Korbel Jan^{1,2}
¹*Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University, Department of Physics, Prague, CZECH REPUBLIC;* ²*Department of Physics, Zhejiang University, Hangzhou, CHINA*
- 16:10 – 16:30** **Systematic analysis of Hadron spectra produced at RHIC and LHC with Tsallis distribution**
Zhu Lilin¹, Zheng Hua²

¹*Department of Physics, Sichuan University, Chengdu, CHINA;* ²*Laboratori Nazionali del Sud, INFN, Catania, ITALY*

16:30 – 17:00 Coffee + **Posters P1 – P17**

17:00 – 19:00 [Kinetic theory and continua](#)

Chair: Grmela M.

17:00 – 17:20 **Perfect-gas thermodynamic model including angular momentum as state parameter**

Giordano Domenico¹, Gonzalez Muñoz Jorge², Donoso Vargas José Manuel²

¹*European Space Agency - ESTEC, Aerothermodynamics, Noordwijk, NETHERLANDS;* ²*Universidad Politécnica de Madrid, ETSIAE, Dpt de Física Aplicada a las Ingenierías Aeronáutica y Naval, Madrid, SPAIN*

17:20 – 17:40 **A closure relation for the higher order alignment tensors from a statistical background and maximum entropy principle**

Papenfuss Christina A.¹

¹*Hochschule für Technik und Wirtschaft Berlin - University of Applied Sciences, Berlin, GERMANY*

17:40 – 18:00 **Fractional heat conduction equation under harmonic boundary conditions**

Povstenko Yuriy¹

¹*Jan Dlugosz University, Institute of Mathematics and Computer Science, Czestochowa, POLAND*

18:00 – 18:20 **Evaporation/Condensation boundary conditions for the regularized 13 moment equations**

Struchtrup Henning¹, Frezzotti Aldo²

¹*University of Victoria, Mechanical Engineering, Victoria, CANADA;* ²*Politecnico di Milano, Dept. of Mathematics, Milano, ITALY*

18:20 – 18:40 **Non-convex dissipation potentials**

Pavelka Michal¹, Janečka Adam¹

¹*Charles University, Mathematical Institute, Prague, CZECH REPUBLIC*

Monday, May 22
Session Room 2

- 14:30 – 16:30** **Thermodynamics of granular media**
Chair: Szekeres A.
- 14:30 – 14:50** **Grading entropy and density of sands**
Emőke Imre¹, Phong Q Trang², Tom Schanz³, János Lőrincz²
¹*Óbuda University, Kandó Kálmán Faculty of Electrical Engineering, Budapest, HUNGARY,* ²*Budapest Univ. of Techn. and Econ., HUNGARY,* ³*Bochum University, GERMANY*
- 14:50 – 15:10** **Grading entropy and BREAKAGE of Granular Matter**
Emőke Imre¹, Phong Q Trang², Stephen Fityus³, Francesca Casini⁴, Giulia Guida⁵, János Lőrincz²
¹*Obudai Egyetem, Budapest, HUNGARY,* ²*BME, Budapest, HUNGARY,* ³*University of Newcastle, AUSTRALIA,* ⁴*Università di Roma Tor Vergata, Roma, ITALY,* ⁵*Università Niccolò Cusano, Roma, ITALY*
- 15:10 – 15:30** **A framework for integration of ‘gradation curve’ in modelling the behaviour of unsaturated soils**
Pande Gyanendra Nath¹, Pietruszczak S.², Wang Min³
¹*Swansea University, Zienkiewicz Centre for Computational Engineering, Swansea, UNITED KINGDOM;* ²*McMaster University, Department of Civil Engineering, Hamilton, CANADA;* ³*Rockfield Software Ltd, Swansea, UNITED KINGDOM*
- 15:30 – 15:50** **Some notes on the grading entropy based rules**
Istvan Talata¹, Tibor Tarnai², Eموke Imre³
¹*SZIE, Budapest, HUNGARY,* ²*BME, Budapest, Budapest, HUNGARY,* ³*Obudai Egyetem, Budapest, HUNGARY*
- 15:50 – 16:10** **Using grading entropy coordinates to analyse mineral dissolution and contact force evolution in granular materials**
Barreto Daniel¹, McDougall John¹, Imre Eموke²
¹*Edinburgh Napier University, Edinburgh, UNITED KINGDOM;* ²*Óbuda University, Budapest, HUNGARY*
- 16:30 -** Coffee + **Posters P1 – P17**

Tuesday, May 23
Plenary Room

08:30 – 10:30 **Minisymposium C – Biothermodynamics**

Chair: Kizilova N.

08:30 – 08:49 **Thermodynamics and kinetics of interlinked molecules: the Mechanical Bond**

Astumian Raymond D.¹

¹*University of Maine, Physics, Orono, UNITED STATES*

08:49 – 09:08 **The ladder theorem**

Salamon Peter¹

¹*San Diego State University, San Diego, UNITED STATES*

09:08 – 09:27 **The Nasal Geometry of the Artic Reindeer Gives Energy-Efficient Respiration**

Magnanelli Elisa¹, Wilhelmsen Øivind¹, Acquarone Mario², Folkow Lars², Kjelstrup Signe¹

¹*Norwegian University of Science and Technology, Trondheim, NORWAY*; ²*University of Tromsø, Tromsø, NORWAY*

09:27 – 09:46 **Molecular motors and fluctuation theorem**

Demirel Yasar¹

¹*University of Nebraska Lincoln, Chemical and Biomolecular Engineering, Lincoln, UNITED STATES*

09:46 – 10:30 Plenary discussion

10:30 – 11:00 Coffee + **Posters P18 – P32**

11:00 – 13:00 **Minisymposium H – Continuum thermomechanics**

Chair: Papenfuss C., Verhás J.

11:00 – 11:13 **CR Thermodynamics of Externally Driven Macroscopic Systems**

Grmela Miroslav¹

¹*Ecole Polytechnique de Montreal, Montreal, CANADA*

- 11:13 – 11:26 **Internal variables in thermoelasticity**
Berezovski Arkadi¹, Van Peter²
¹Tallinn University of Technology, Institute of Cybernetics, Tallinn, ESTONIA; ²Wigner RCP, HAS, Dept. of Theoretical Physics, Budapest, HUNGARY
- 11:26 – 11:39 **Finite speed heat propagation as a consequence of microstructural events**
Mariano Paolo Maria¹
¹University of Florence, Firenze, ITALY
- 11:39 – 11:52 **Non-local thermodynamic models for inhomogeneous solids**
Svendsen Bob¹, Hütter Markus²
¹RWTH Aachen University, Material Mechanics, Aachen, GERMANY; ²TU Eindhoven, Polymer Technology, Department of Mechanical Engineering, Eindhoven, NETHERLANDS
- 11:52 – 12:05 **A phase-field approach to material degradation**
Weinberg Kerstin¹
¹Universität Siegen, Fakultät IV, Dept. Maschinenbau, Siegen, GERMANY
- 12:05 – 12:18 **Dissipation estimation in a multiscale model**
Cailletaud Georges¹, Coudon Florent^{1,2}
¹MINES ParisTech, Evry, FRANCE; ²SAFRAN Tech, Chateaufort, FRANCE
- 12:18 – 13:00 Plenary discussion
- 13:00 – 14:30 Lunch
- 14:30 – 15:00** **Prigogine lecture**
Chair: Tondeur D.
- Equilibrium and non-equilibrium Thermodynamics of planar and curved interfaces**
Wilhelmsen Oivind
Norwegian University of Science and Technology, Trondheim, NORWAY

- 15:00 – 16:40** **Small systems I: quantum thermodynamics**
Chair: Hoffmann K. H.
- 15:00 – 15:20** **Macroscopic quantum shape effects on thermodynamic potentials**
Aydin Alhun¹, Sisman Altug¹
¹*Istanbul Technical University, Energy Institute, Istanbul, TURKEY*
- 15:20 – 15:40** **Identical thermodynamic output of single-atom quantum optical amplifiers and their phase space fingerprint**
Boukobza Erez¹, Band Yehuda^{2,3}, Perl Yossi⁴
¹*Tel Aviv University (TAU) & Nuclear Research Center (NRCN), Chemistry, Tel Aviv, ISRAEL;* ²*Ben-Gurion University of the Negev, Department of Chemistry, Department of Physics, Department of Electro-Optics, and the Ilse Katz Center for Nano-Science, Beer-Sheva, ISRAEL;* ³*New York University and the NYU-ECNU Institute of Physics at NYU, Shanghai, CHINA;* ⁴*Ben-Gurion University of the Negev, Department of Physics, Beer-Sheva, ISRAEL*
- 15:40 – 16:00** **Quantum performance of thermal machines over many cycles**
Watanabe Gentaro¹, Venkatesh B. Prasanna², Talkner Peter³, del Campo Adolfo⁴
¹*Zhejiang University, Department of Physics, Hangzhou, CHINA;* ²*Institute for Quantum Optics and Quantum Information, Innsbruck, AUSTRIA;* ³*University of Augsburg, Augsburg, GERMANY;* ⁴*University of Massachusetts, Boston, UNITED STATES*
- 16:00 – 16:20** **Is Carnot efficiency at nonvanishing power output possible?**
Polettini Matteo¹
¹*University of Luxembourg, Luxembourg, LUXEMBOURG*
- 16:20 – 16:40** **Temperature driven quenches in the Ising model: Appearance of negative Rényi mutual information**
Zimborás Zoltán¹, Kormos Márton²
¹*Wigner Research Centre for Physics, Theoretical Physics Department, Budapest, HUNGARY;* ²*Budapest University of Technology and Economics (BME-MTA), Statistical Field Theory Research Group, Institute of Physics, Budapest, HUNGARY*
- 16:40 – 17:00** Coffee + **Posters P18 – P32**

- 17:00 – 19:00** **Thermodynamics in biology**
Chair: Salamon P.
- 17:00 – 17:20 **Models of biological heat conduction**
Kovacs Robert¹
¹*Wigner RCP, HAS, Department of Theoretical Physics, Budapest, HUNGARY*
- 17:20 – 17:40 **A Theoretical Study on the Morphological Phase Diagram of Supported Lipid Bilayers**
Xian Kong¹, Lu Diannan¹, Jianzhong Wu², Zheng Liu¹
¹*Tsinghua University, Department of Chemical Engineering, Beijing, CHINA;* ²*University of California, Riverside, Department of Chemical and Environmental Engineering, California, UNITED STATES*
- 17:40 – 18:00 **The copying fidelity of a polymerase facing an obstacle**
Rahav Saar¹, Bogod Ilana¹
¹*Technion - Israel Institute of Technology, Schulich faculty of Chemistry, Haifa, ISRAEL*
- 18:00 – 18:20 **Interaction between curvature and topological defects**
Kralj Samo¹, Mesarec Luka², Kurioz Pavlo¹, Igljic Ales², Gozdz Wojciech³
¹*University of Maribor, Faculty of Natural Sciences and Mathematics, Maribor, SLOVENIA;* ²*University of Ljubljana, Faculty of Electrical Engineering, Ljubljana, SLOVENIA;* ³*Polish Academy of Sciences, Institute of Physical Chemistry, Warsaw, POLAND*
- 18:20 – 18:40 **Life at extleml conditions: A thermodynamical approach**
Kizilova Natalia¹
¹*Warsaw University of Technology, ITiMS, Warsaw, POLAND*
- 18:40 – 19:00 **Hamiltonian coupling of EM-Field and matter**
Esen Oğul¹, Pavelka Michal^{2,3,4}, Grmela Miroslav²
¹*Gebze Technical University, Kocaeli, TURKEY;* ²*University of West Bohemia, New Technologies - Research Centre, Pilsen, CZECH REPUBLIC;* ³*Charles University in Prague, Mathematical Institute, Faculty of Mathematics and Physics, Prague, CZECH REPUBLIC;* ⁴*Ecole Polytechnique de Montreal, Qubec, CANADA*
- 20:00 -** **Banquet**
Prigogine prize ceremony

May 23, Tuesday
Session Room 1

- 15:00 – 16:40** **Nonequilibrium interfacial thermodynamics**
Chair: Sodus R.
- 15:00 – 15:20** **Tolman's law and the adsorption equation for nanodispersed phases**
Horsch Martin Thomas^{1,2}, Becker Stefan², Heier Michaela², Singh Jayant Kumar¹, Jackson George³, Diewald Felix⁴, Müller Ralf⁴, Vrabec Jadran⁵, Hasse Hans²
¹Indian Institute of Technology Kanpur, Department of Chemical Engineering, Kanpur, INDIA; ²University of Kaiserslautern, Laboratory of Engineering Thermodynamics, Kaiserslautern, GERMANY; ³Imperial College London, Department of Chemical Engineering, London, UNITED KINGDOM; ⁴University of Kaiserslautern, Institute of Applied Mechanics, Kaiserslautern, GERMANY; ⁵University of Paderborn, Thermodynamics and Energy Technology, Paderborn, GERMANY
- 15:20 – 15:40** **Membrane distillation of salt water against a pressure**
Kjelstrup Signe¹, Keulen Luuc², Kuipers Norbert³
¹Norwegian University of Science and Technology, Department of Chemistry, Trondheim, NORWAY; ²Politecnico di Milano, Department of Areospace Science and Technology, Trondheim, ITALY; ³Netherlands Organisation for Applied Scientific Research, TNO, Department of Water Treatment, Zeist, NETHERLANDS
- 15:40 – 16:00** **Thermodynamic and dynamic properties at the intrinsic liquid surface**
Jedlovsky Pal^{1,2,3}, Sega Marcello⁴, Horvai George^{5,3}, Fabian Balazs^{5,6}
¹ELTE, Institute of Chemistry, Budapest, HUNGARY; ²Eszterhazy Karoly University, Department of Chemistry, Eger, HUNGARY; ³MTA-BME Research Group of Technical Analytical Chemistry, Budapest, HUNGARY; ⁴University of Vienna, Computational Physics Group, Wien, AUSTRIA; ⁵Technical University of Budapest, Department of Inorganic and Analytical Chemistry, Budapest, HUNGARY; ⁶University of Bourgogne - Franche Comte, Institut UTINAM, Besancon, FRANCE

- 16:00 – 16:20 **Dynamics of the Water Molecules at the Intrinsic Liquid Surface As Seen from Molecular Dynamics Simulation and Identification of the Truly Interfacial Molecules Analysis**
Fabian Balazs^{1,2}, Senćanski Milan V.³, Cvijetić Ilija N.⁴, Jedlovsky Pál^{5,6,7}, Horvai George^{5,1}
¹*Budapest University of Technology and Economics, Department of Inorganic and Analytical Chemistry, Budapest, HUNGARY;* ²*Univesité Bourgogne Franche-Comté, Institut UTINAM–UMR CNRS 6213, Besançon, FRANCE;* ³*University of Belgrade, Center for Multidisciplinary Research, Institute of Nuclear Sciences Vinča, Belgrade, SERBIA;* ⁴*University of Belgrade, Innovation Center, Faculty of Chemistry, Belgrade, SERBIA;* ⁵*MTA-BME Research Group of Technical Analytical Chemistry, Budapest, HUNGARY;* ⁶*Eszterházy Károly Egyetem, Department of Chemistry, Eger, HUNGARY;* ⁷*Eötvös Loránd University, Laboratory of Interfaces and Nanosize Systems, Institute of Chemistry, Budapest, HUNGARY*
- 16:20 – 16:40 **Ideal gas contribution to surface tension of liquid surfaces**
Sega Marcello¹, Jedlovsky Pal², Fabian Balazs^{3,4}
¹*University of Vienna, Vienna, AUSTRIA;* ²*Eszterházy Károly University, Eger, HUNGARY;* ³*Budapest University of Technology and Economics, Budapest, HUNGARY;* ⁴*Univesité Bourgogne Franche-Comté, Besançon, FRANCE*
- 16:40 – 17:00 Coffee + **Posters P18 – P32**
- 17:00 – 19:00** **Thermomechanics**
Chair: Svendsen B.
- 17:00 – 17:20 **Rheology of solids - Nonequilibrium thermodynamical treatment and analytical investigations**
Fülöp Tamás¹, Szücs Mátyás¹
¹*BME, Department of Energy Engineering, Budapest, HUNGARY*
- 17:20 – 17:40 **On the Topology of State-space, Linear vs. Nonlinear Theories and Dry Friction**
Verhás József I.¹
¹*Budapest University of Technology and Economy, Institute of Physics, Budapest, HUNGARY*

- 17:40 – 18:00 **A thermodynamically consistent material model for finite-strain cyclic plasticity of metals**
Écsi Ladislav¹, Ván Péter^{2,3,4}, Fülöp Tamás^{3,4}, Fekete Balázs⁵, Élesztős Pavel¹, Jančo Roland¹
¹*Slovak University of Technology in Bratislava, Faculty of Mechanical Engineering, Institute of Applied Mechanics and Mechatronics, Bratislava, SLOVAKIA*; ²*Wigner RCP, Dep. Of Theoretical Physics, Budapest, HUNGARY*; ³*BME, Dept. of Energy Engineering, Budapest, HUNGARY*; ⁴*Montavid Thermodynamic Research Group, Budapest, HUNGARY*; ⁵*University of Dunaújváros, Dunaújváros, HUNGARY*
- 18:00 – 18:20 **Structural Integrity Calculations of Large Scale Pressure Vessels**
Fekete Tamás¹
¹*HAS Centre for Energy Research, Fuel and Reactor Materials Department, Structural Integrity Group, Budapest, HUNGARY*
- 18:20 – 18:40 **On dynamic stability in fractional thermomechanics**
Béda Péter B.¹
¹*Budapest University of Technology and Economics, Budapest, HUNGARY*
- 20:00** **Banquet**
Prigogine prize ceremony

Wednesday, May 24
Plenary Room

- 08:30 – 10:30** **Minisymposium E - Computational thermodynamics of phases and surfaces**
Chair: Deiters U.
- 08:30 – 08:43** **Discussion on the functional form of alpha-functions involved in cubic equations of state**
Le Guennec Yann¹, Lasala Silvia¹, Privat Romain¹, Jaubert Jean-Noël¹
¹*Université de Lorraine, ENSIC-LRGP, Nancy, FRANCE*
- 18:43 – 08:56** **Predicting Phase Behavior of Metallic Mercury in Liquid and Compressed Gaseous Hydrocarbons**
Polishuk Ilya¹, Chorążewski Mirosław²
¹*Ariel University, Department of Chemical Engineering, Ariel, ISRAEL*; ²*Institute of Chemistry, University of Silesia, Katowice, POLAND*
- 08:56 – 09:09** **Estimation of Multicomponent Interfacial Density Profiles directly from the Helmholtz Free Energy Surface**
Quiñones-Cisneros Sergio E.^{1,2}, Granados-Bazán Eder L¹, Deiters Ulrich K.¹
¹*University of Cologne, Institut für Physikalische Chemie, Cologne, GERMANY*; ²*F-Thermo Services, Cologne, GERMANY*
- 09:09 – 09:22** **Thermodynamic fluid equations-of-state: New science-based functional forms**
Woodcock Leslie V.¹
¹*University of Algarve, Physics, Faro, PORTUGAL*
- 09:22 – 09:35** **Isochoric thermodynamics and binary mixture P-X and T-X diagrams**
Bell Ian H.¹, Deiters Ulrich²
¹*National Institute of Standards and Technology, Boulder, UNITED STATES*; ²*University of Cologne, Institute of Physical Chemistry, Köln, GERMANY*
- 09:35 – 09:48** **Thermodynamic properties of neon: Lessons for the development of intermolecular potentials for moderately strong quantum fluids**
Vlasiuk Maryna¹, Sadus Richard J¹
¹*Swinburne University of Technology, Hawthorn, AUSTRALIA*

- 09:48 – 10:30 Plenary discussion
- 10:30 – 11:00 Coffee and **Posters P33 – P48**
- 11:00 – 13:00 Minisymposium G - Chemical thermodynamics**
Chair: Kjelstrup S.
- 11:00 – 11:15 **Rate-Controlled Constrained-Equilibrium Approach to Complex Kinetics. A Reduction Scheme to make modeling accessible to engineers unspecialized in chemical kinetics**
Beretta Gian-Paolo¹
¹*Brescia University, Brescia, ITALY*
- 11:15 – 11:30 **Transport processes and cross-coupling effects in non-equilibrium chemically reacting mixtures**
Kustova Elena¹
¹*Saint Petersburg State University, Mathematics and Mechanics, Saint Petersburg, RUSSIA*
- 11:30 – 11:45 **Enzyme kinetics driven by entropy generation**
Rubi Miguel¹, Arango-Restrepo Andres², Barragan Daniel²
¹*University of Barcelona, Barcelona, SPAIN*; ²*Escuela de Química, Facultad de Ciencias, Universidad Nacional de Colombia, Medellín, COLOMBIA*
- 11:45 – 12:00 **Non-equilibrium simulations of fluids under thermal gradients: local properties and coupling effects**
Bresme Fernando¹
¹*Imperial College London, London, UNITED KINGDOM*
- 12:00 – 12:15 **Chemically constrained systems: New perspectives from nanothermodynamics**
Simon Jean-Marc¹
¹*Université de Bourgogne / CNRS, ICB / Chemistry Department, Dijon, FRANCE*
- 12:15 – 13:00 Plenary discussion
- 13:00 – 14:30 Lunch

- 14:30 – 16:30** **Small systems II: quantum thermodynamics**
Chair: Öttinger H. C.
- 14:30 – 14:50** **Limit cycles of the quantum Otto engine**
Andresen Bjarne¹, Insinga Andrea², Salamon Peter³, Kosloff Ronnie⁴
¹*University of Copenhagen, Niels Bohr Institute, Copenhagen, DENMARK;* ²*Technical University of Denmark, Roskilde, DENMARK;* ³*San Diego State University, Department of Mathematics and Statistics, San Diego, UNITED STATES;* ⁴*The Hebrew University, Institute of Chemistry, Jerusalem, ISRAEL*
- 14:50 – 15:10** **Quantum thermal rectifiers and transistors**
Joulain Karl¹, Ordonez-Miranda Jose^{1,2}, Ezzahri Younes¹
¹*University of Poitiers, Institut Pprime, Poitiers, FRANCE;* ²*CNRS, Poitiers, FRANCE*
- 15:10 – 15:30** **Additional Clausius inequality second laws for higher energy moments in small open quantum systems**
Uzdin Raam¹
¹*Technion - Israel Institute of Technology, Haifa, ISRAEL*
- 15:30 – 15:50** **Thermosize effects in semiconductors**
Karabetoglu Sevan¹, Sisman Altug¹
¹*Istanbul Technical University, Istanbul, TURKEY*
- 15:50 – 16:10** **A Brownian duet**
Proesmans Karel¹, Van den Broeck Christian¹, Cleuren Bart¹, Bechhoefer John², Gavrilov Momčilo², Dreher Yannik²
¹*UHasselt, Theoretical Physics, Hasselt, BELGIUM;* ²*Simon Fraser University, Vancouver, CANADA*
- 16:10 – 16:30** **Jaynes' principle for quantum Markov processes**
Novotny J.¹, Jex I.¹, Maryska J.¹
¹*CTU, Prague, CZECH REPUBLIC*
- 16:30 – 17:00** Coffee and **Posters P33 – P48**

- 17:00 – 19:00** [Chemical thermodynamics](#)
Chair: Tondeur D.
- 17:00 – 17:20** **Thermodynamics of Information Processing in Chemical Reaction Networks**
[Rao Riccardo](#)¹, [Esposito Massimiliano](#)¹
¹*University of Luxembourg, Luxembourg, LUXEMBOURG*
- 17:20 – 17:40** **Dissipation in noisy chemical networks: the role of deficiency**
[Polettini Matteo](#)¹, [Wachtel Artur](#)¹, [Esposito Massimiliano](#)¹
¹*University of Luxembourg, Physics and Materials Science, Luxembourg, LUXEMBOURG*
- 17:40 – 18:00** **Contact Hamiltonian formulation of multiphase systems on the example of the flash reactor**
[Maschke Bernhard](#)¹, [Guay Martin](#)²
¹*Université Lyon, LAGEP, Villeurbanne, FRANCE;* ²*Queen's University, Chemical Engineering, Kingston, CANADA*
- 18:00 – 18:20** **A thermodynamic model for the activated plasma kernel volume resulting from spark discharge at high pressures**
[Meyer Georg](#)¹, [Wimmer Andreas](#)²
¹*LEC GmbH, Large Engines Competence Center, Simulation & Validation, Graz, AUSTRIA;* ²*Institute of Internal Combustion Engines and Thermodynamics, Graz University of Technology, Graz, AUSTRIA*
- 18:20 – 18:40** **Perturbed equilibrium: New results in joint kinetics**
[Yablonsky Grigoriy](#)¹, [Branco P. Daniel](#)², [Marin Guy B.](#)³, [Constales Denis](#)²
¹*Saint Louis University, Parks College, St. Louis, UNITED STATES;* ²*Department of Mathematical Analysis, Gent University, Gent, BELGIUM;* ³*Laboratory for Chemical Technology, Gent University, Gent, BELGIUM*
- 18:40 – 19:00** **Entropy and enthalpy of reaction determination using observed extraordinary optical transmission measurements**
[Kowalski Gregory, J](#)¹, [Modaresifar Masoud](#)¹, [Larson Dale](#)²
¹*Northeastern University, Dept. of Mechanical and Industrial Engineering, Boston, UNITED STATES;* ²*Charles Stark Draper Laboratory, Bioengineering, Cambridge, UNITED STATES*

Wednesday, May 24
Session Room 1

- 14:30 – 16:30** **Non-equilibrium thermodynamics of complex systems II.**
Chair: Polishuk I.
- 14:30 – 14:50** **Continuum thermodynamics of solids in spacetime**
Fülöp Tamás¹
¹*BME, Department of Energy Engineering, Budapest, HUNGARY*
- 14:50 – 15:10** **What can a better coupling between space and time concepts bring to thermodynamics?**
Guy Bernard¹
¹*Ecole des Mines de Saint-Etienne, Saint-Etienne, FRANCE*
- 15:10 – 15:30** **The origin of supercritical pseudo-boiling**
Imre Attila R.^{1,2}, Györke Gábor², Groniewsky Axel², Ramboz Claire³
¹*MTA Centre for Energy Research, Budapest, HUNGARY*; ²*Budapest University of Technology and Economics, Department of Energy Engineering, Budapest, HUNGARY*; ³*Université d'Orleans, ISTO, Orléans, FRANCE*
- 15:30 – 15:50** **Differential equations for the calculation of isopleths**
Deiters Ulrich K.¹
¹*University of Cologne, Institute of Physical Chemistry, Köln, GERMANY*
- 15:50 – 16:10** **Dynamics of miscible interfaces under periodic excitations**
Shevtsova Valentina¹, Gaponenko Yuri¹, Yasnou Viktor¹, Mialdun Aliaksandr¹
¹*University of Brussels, Brussels, BELGIUM*
- 16:10 – 16:30** **Hydraulic Temperature Control Technique and Its Application to the Calorimetric Determination of the Liquidus Temperature of Tin**
Joung Wukchul¹
¹*Korea Research Institute of Standards and Science, Division of Physical Metrology, Daejeon, SOUTH KOREA*
- 16:30 – 17:00** Coffee and **Poster P33 – P48**

- 17:00 – 19:00** **Entropy production minimization**
Chair: **Andresen B.**
- 17:00 – 17:20** **The principle of maximum entropy production in the context of the proofs of Onsager's theorem**
Benfenati Francesco¹, Beretta Gian Paolo¹
¹*University of Brescia, Brescia, ITALY*
- 17:20 – 17:40** **From finite time thermodynamics to finite physical dimensions thermodynamics**
Feidt Michel¹, Costea Monica²
¹*University of Lorraine, Vandoeuvre, FRANCE*; ²*University Politehnica of Bucharest, Department of Engineering Thermodynamics, Bucharest, ROMANIA*
- 17:40 – 18:00** **A dynamical optimization approach to compute non-equilibrium averages**
Thalabard Simon¹
¹*Observatoire de la Côte d'Azur, Nice, FRANCE*
- 18:00 – 18:20** **Closed loop approach to thermodynamics**
Goupil Christophe¹, Ouerdane Henni², Herbert Eric¹, Benenti Giuliano³, D'Angelo Yves⁴, Lecoeur Philippe⁵
¹*Paris Diderot University, LIED, Laboratoire Interdisciplinaire des Energies de Demain, Paris, FRANCE*; ²*Russian Quantum Center, Russian Quantum Center, Skolkovo, Moscow Region RUSSIA*; ³*Center for Nonlinear and Complex Systems, Universita degli Studi dell'Insubria, via Valleggio, Dipartimento di Scienza e Alta Tecnologia, Como, ITALY*; ⁴*University of Nice - Sophia Antipolis Parc Valrose, Laboratory of Mathematics J.A. Dieudonné, CNRS UMR 7351, Nice, FRANCE*; ⁵*Université Paris Sud CNRS, CNRS, UMR 8622, Institut d'Electronique Fondamentale, Orsay, FRANCE*
- 18:20 – 18:40** **CFD-based entropy generation study of a flat plate heat exchanger**
Mazzelli Federico¹
¹*University of Florence, Industrial Engineering Department, DIF, Firenze, ITALY*

Thursday, May 25

Plenary Room

- 08:30 – 10:30** [Minisymposium B - Thermodynamics of quantum systems](#)
Chair: Kosloff R.
- 08:30 – 08:49 **Arrow of time for repeated and continuous quantum measurement**
Jordan Andrew¹
¹*University of Rochester, Rochester, UNITED STATES*
- 08:49 – 09:08 **Rebuilding quantum thermodynamics on quantum measurement**
Auffèves Alexia A.¹, Elouard Cyril¹, Herrera-Marti David¹, Clusel Maxime², Huard Benjamin³
¹*Institut Néel - CNRS, Grenoble, FRANCE*; ²*Laboratoire Charles Coulomb, Montpellier, FRANCE*; ³*Ecole Normale Supérieure de Lyon, Lyon, FRANCE*
- 09:08 – 09:27 **Thermalization in small driven quantum systems**
Thingna Juzar¹, Barra Felipe², Esposito Massimiliano¹
¹*University of Luxembourg, Luxembourg, LUXEMBOURG*; ²*Universidad de Chile, Santiago de Chile, CHILE*
- 09:27 – 09:46 **Power from simplest steady-state quantum heat engine**
Diósi Lajos¹
¹*Wigner Research Centre for Physics, High Energy Physics Dept., Budapest, HUNGARY*
- 09:46 – 10:30 Plenary discussion
- 10:30 – 11:00 Coffee and **Posters**
- 11:00 – 13:00** [Minisymposium D - Engineering thermodynamics](#)
Chair: Feidt M.
- 11:00 – 11:19 **On a new interpretation of the endoreversibility hypothesis in Curzon-Ahlborn-like heat engines**
Gonzalez-Ayala Julian¹, Hernández Arias², F. Angulo-Brown²
¹*Universidad de Salamanca, Applied Physics, Salamanca, SPAIN*; ²*Instituto Politecnico Nacional, Departamento de Fisica, Escuela Superior de Fisica y Matematicas, Ciudad de Mexico, MEXICO*

- 11:19 – 11:38 **Inspired by Thermodynamics: Total Site Integration for Energy Savings and Reduction of Greenhouse Gas, Water and Nitrogen Footprints**
Petar Varbanov, Jiří Jaromír Klemeš, Ferenc Friedler
Sustainable Process Integration Laboratory (SPIL), NETME Centre, Faculty of Mechanical Engineering, Brno University of Technology, Brno, CZECH REPUBLIC
- 11:38 – 11:57 **Thermal Diagnostics of Structures and Materials Measuring Temperature and its Derivatives**
Kiss László¹
¹*Université du Québec à Chicoutimi UQAC, Département des sciences appliquées, Chicoutimi, CANADA*
- 11:57 – 12:16 **Thermal energy quality based on exergy concept**
Poredos Alojz¹
¹*University of Ljubljana, Faculty of Mechanical Engineering, Department of Thermal and Environmental Engineering, Ljubljana, SLOVENIA*
- 12:16 – 13:00 Plenary discussion
- 13:00 – 13:15 Closing of the conference
- 13:15 – 14:30 Lunch

POSTERS

P01

Extension of Meixner theory of acoustic damping: The role of entropy flux

Kovacs Robert¹, Ván Péter¹

¹*Wigner RCP, HAS, Department of Theoretical Physics, Budapest, HUNGARY*

P02

A discrete dissipative physical problem: The damped harmonic oscillator

Gambár Katalin¹, Lendvay Marianna¹, Lovassy Rita¹, Bugyjas József¹

¹*Institute of Microelectronics and Technology, Óbuda University, Budapest, HUNGARY*

P03

Complex potentials in the description of dissipation

Márkus Bence G.^{1,2}, Márkus Ferenc¹

¹*Department of Physics, Budapest University of Technology and Economics, Budapest, HUNGARY;* ²*MTA-BME Lendület Spintronics Research Group (PROSPIN), Budapest, HUNGARY*

P04

Is thermodynamic irreversibility a consequence of the expansion of the universe?

Osváth Szabolcs¹

¹*Semmelweis University, Budapest, HUNGARY*

P05

A hierarchical structure of entropy and exergy properties definition

Palazzo Pierfrancesco¹

¹*University Sapienza Rome Italy, Department of Astronautic, Electric and Energetic Engineering (DIAEE), Roma, ITALY*

P06

Stochastic thermodynamics of a particle in a box

Quan Haitao¹

¹*Peking University, Beijing, CHINA*

P07

Thermodynamic theory of transfer phenomena in nanosystems and properties of thin layer catalysts

Serdyukov Sergey Ivanovich¹, Sizova Irina A.², Maksimov Anton L.¹

¹*Moscow State University, Chemistry Department, Moscow, RUSSIA;* ²*Topchiev Institute of Petrochemical Synthesis, Moscow State University, Moscow, RUSSIA*

P08

Influence of dynamic conditions on results of metals thermal diffusivity measurements

Ermishkin Viacheslav Alexandro¹, Kulagin Sergej Pavlovich¹, Tomenko Alexander Konstantinov¹, Minina Natalia Anatolievna¹

¹*Institut of Metallurgy and Materials of Russian Academy of Sciences, Laboratory of high-voltage electron microscopy, Moscow, RUSSIA*

P09

A generalized correlation for critical pressure calculation based on an innovative ideal critical pressure parameter

Grigante Maurizio¹

¹*University of Trento, Civil Environmental and Mechanical Engineering, Trento, ITALY*

P10

Some thermoelastic optophononic devices

Jou David¹, Criado-Sancho Manuel¹

¹*Universitat Autònoma de Barcelona, Departament de Física, Bellaterra, SPAIN*

P11

Assessment of thermal characteristics of metal according to measurements of its reflectivity ability

Minina Natalia Anatolievna¹, Ermishkin Viacheslav Alexandrovich¹, Kudriavtchev Evgenij Mihailovi², Roshupkin Vladimir Vladimirovi¹

¹*Institut of Metallurgy and Materials of Russian Academy of Sciences, laboratory of Physical Researchers, Moscow, RUSSIA;* ²*Physical Institute of Russian Academy of Sciences, Physical laboratory, Moscow, RUSSIA*

P12

Density of the binary system HFE-7100 + 1-Propanol at temperatures from 298.15 K to 393.15 K and at pressures up to 70 MPA

Muñoz-Rujas Natalia¹, Aguilar Fernando¹, Montero Eduardo A.¹

¹*Universidad de Burgos, Burgos, SPAIN*

P13

A new corresponding-states based correlation for the surface tension of refrigerants

Cachadiña Gutiérrez Isidro¹, Mulero Díaz Ángel¹, Tian Jianxiang²

¹*Universidad de Extremadura, Dpto. Física Aplicada, Badajoz, SPAIN;* ²*Qufu Normal University, Department of Physics, Qufu, CHINA*

P14

Equilibrium thermodynamic system equivalent of the non-equilibrium closed-cup flash point system

Gerbaud Vincent¹, Shcherbakova Nataliya¹, Da Cunha Sergio¹

¹*Laboratoire de Génie Chimique, Toulouse, FRANCE*

P15

On the divergence of the constant volume heat capacity at the critical point

Quiñones-Cisneros Sergio E.^{1,2}, Deiters Ulrich K.¹

¹*University of Cologne, Institut für Physikalische Chemie, Cologne, GERMANY;* ²*F-Thermo Services, Cologne, GERMANY*

P16

Percolation loci as thermodynamic fluid phase bounds: Evidence from computational studies of model fluids

Woodcock Leslie V¹

¹*University of Algarve, Physics, Faro, PORTUGAL*

P17

Thermodynamic approach to dielectric parameters of human blood: Application to early medical diagnostics of tumors

Kizilova Natalia^{1,2}, Batyuk Liliya³

¹*Warsaw University of Technology, ITiMS, Warsaw, POLAND;* ²*Vilnius Gediminas Technical University, Vilnius, LITHUANIA;* ³*Kharkiv National Medical University, Kharkiv, UKRAINE*

P18

Galilean and special relativistic fluids

Ván Peter¹

¹*MTA Wigner RCP, Theoretical Phys., Budapest, HUNGARY*

P19

Nonequilibrium thermodynamical internal variable description of rheology of solids in the generic framework

Fülöp Tamás¹, Szűcs Mátyás¹

¹*BME, Department of Energy Engineering, Budapest, HUNGARY*

P20

Modeling of ballistic heat conduction in NAF experiments

Kovacs Robert¹, Ván Péter¹

¹*Wigner RCP, HAS, Department of Theoretical Physics, Budapest, HUNGARY*

P21

Non-Fourier heat conduction: numerical and experimental study

Lovas Ádám¹

¹*Budapest University of Technology and Economics, Budapest, HUNGARY*

P22

Violation of the maximum principle and negative solutions for pulse propagation in Guyer–Krumhansl model

Zhukovsky Konstantin¹

¹*M.V.Lomonosov Moscow State University, Faculty of Physics, Moscow, RUSSIA*

P23

Recommended correlations for the surface tension of unsaturated aliphatic acids

Mulero Angel¹, Sanjuán Eva L.², Cachadiña Isidro¹

¹*University of Extremadura, Applied Physics Department, Badajoz, SPAIN;* ²*University of Extremadura, Mathematics Department, Badajoz, SPAIN*

P24

Diffusion and thermodiffusion in ternary mixture

Mialdun Aliaksandr¹, Shevtsova Valentina¹

¹*University of Brussels, Brussels, BELGIUM*

P25

Energetic study of a low dissipation heat and refrigerator engine, the role of the parameters of control and dissipation symmetries

Gonzalez-Ayala Julian¹, Medina Domínguez Alejandro¹, Mateos Roco José Miguel¹, Calvo Hernández Antonio¹

¹*Universidad de Salamanca, Applied Physics, Salamanca, SPAIN*

P26

Conditions for minimum entropy production in chemical reactors

Kingston Diego¹, Razzitte Adrian C.¹

¹*Universidad de Buenos Aires, Facultad de Ingeniería, Buenos Aires, ARGENTINA*

P27

An Analytical study of an endoreversible Curzon-Ahlborn cycle with the Dulong-Petit heat transfer law working at maximum ecological regime

Paez-Hernandez Ricardo Teodoro¹, Portillo-Dáz P.¹, Ladino-Luna D.¹, Ramírez-Rojas A.¹, Sánchez-Salas N.²

¹*Universidad Autonoma Metropolitana, CBI, Mexico Df, MEXICO;* ²*Escuela Superior de Física y Matemáticas, Departametro de Física, Ciudad de México, MEXICO*

P28

Optimization of low-dissipation Carnot engine under saving functions

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P29

Energy principles in thermodynamics

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P30

Effects of the generalization of an optimum operating regime on the construction of an endoreversible engine

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P31

Nonequilibrium empiric, caloric and entropic temperatures and reference equilibrium values for hidden variables

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P32

Dusty gas model in different thermodynamics frameworks

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P33

Preliminary study on the relationship between statistical entropy coordinates and the mechanical behaviour of granular materials

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P34

Volumetric, speed of sound and refractive index data for NN-dimethylacetamide + 2-alkanone systems at several temperatures

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P35

Volumetric, speed of sound, refractive index and permittivity data for N,N-dimethylformamide, N,N-dimethylacetamide + acetophenone systems at several temperatures

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P36

Obtaining the Empirical Temperature from the Zero Law of Thermodynamics: Zemansky, Kratzer and Päsler

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P37

Relative permittivities of N,N-dimethylformamide + N-propylpropan-1-amine, + N-butylbutan-1-amine, + butan-1-amine, or + hexan-1-amine systems at several temperatures

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P38

Orientational effects in alkanone, alkanal or dialkyl carbonate + alkane mixtures and in alkanone + alkanone or + dialkyl carbonate systems

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P39

Dielectric and refractive index measurements of 1-alkanol + N-propylpropan-1-amine systems at several temperatures

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P40

Relative permittivities of N,N-dimethylacetamide + N-propylpropan-1-amine, + N-butylbutan-1-amine, + butan-1-amine, or + hexan-1-amine systems at several temperatures

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P41

Oriental effects in mixtures of organic carbonates with alkanes or 1-alkanols

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P42

Thermodynamics of search process

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P43

Rayleigh-Bénard convection in the generalized Oberbeck-Boussinesq system

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P44

Thermo-Hygro-Mechanics (THM) from different aspects

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P45

A non-equilibrium foundation of thermodynamics

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P46

Thermodynamics of Lotka-Volterra dynamics

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P47

Tetrad-Effect as a Tool for Assessment of Thermodynamic Properties of Lanthanide Compounds

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P48

A topological interpolation method with the entropy map

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AUTHOR INDEX
POSTER PRESENTATIONS

Barreto Daniel	P33	Muñoz-Rujas Natalia	P12
Cachadiña Gutiérrez		Osváth Szabolcs	P04
Isidro	P13	Paez-Hernandez	
Cobos Ana	P34, P35	Ricardo Teodoro	P27, P28
Ermishkin Viacheslav		Pal Arnab	P42
Alexandro	P08	Palazzo Pierfrancesco	P05
Gambár Katalin	P02	Pocsaí Mihály András	P43
Gerbaud Vincent	P14	Quan Haitao	P06
Gómez-Estévez Juan		Quiñones-Cisneros	
Luis	P36	Sergio E.	P15
Gonzalez-Ayala Julian	P25	Serdyukov Sergey	
Grigiane Maurizio	P09	Ivanovich	P07
	P37, P38,	Szekeres Andras	P46
Hevia Fernando	P39, P40, P41	Szücs Mátyás	P19
Imre Emőke	P48	Tian Zhao	P29
Jou David	P10, P31	Tremmel Bálint	P47
Kingston Diego	P26	Vágner Petr	P32
Kizilova Natalia	P17	Valencia-Ortega	
Kovacs Robert	P01, P20	Gabriel	P30
Lovas Ádám	P21	Ván Peter	P18, P48
Márkus Ferenc	P03	Vassiliev Valery Pierre	P49
Mialdun Aliaksandr	P24	Woodcock Leslie V.	P16
Minina Natalia		Zhukovsky Konstantin	P22
Anatolievna	P11		
Mulero Angel	P23		

AUTHOR INDEX
ORAL PRESENTATIONS

	Page number		Page number
A		G	
Abe Sumiyoshi	13	Giordano Domenico	18
Andresen Bjarne	29	Gonzalez-Ayala Julian	33
Astumian Raymond D.	20	Goupil Christophe	32
Auffèves Alexia A.	33	Grmela Miroslav	20
Aydin Alhun	22	Gróf Gyula	16
B		Guy Bernard	31
Bagci Gökhan Baris	13	H	
Barreto Daniel	19	Horsch Martin	
Béda Péter B.	26	Thomas	24
Bell Ian H.	27	I	
Benfenati Francesco	32	Imre Attila R.	31
Beretta Gian-Paolo	28	Imre Emőke	19
Berezovski Arkadi	21	J	
Biró Tamás S.	13	Jaubert Jean-Noël	27
Bíró Gábor	17	Jedlovszky Pál	24
Boukobza Erez	22	Jizba Petr	13
Bresme Fernando	28	Jordan Andrew	33
C		Jou David	14
Cailletaud Georges	21	Joulain Karl	29
Cao Bingyang	14	Joung Wukchul	31
Ciancio Vincenzo	15	K	
D		Karabetoglu Sevan	29
Deiters Ulrich K.	31	Kizilova Natalia	23
Demirel Yasar	20	Kjelstrup Signe	24
Diósi Lajos	33	Kocsis Bence	17
E		Korbel Jan	17
Écsi Ladislav	26	Kovacs Robert	23
Esen Oğul	23	Kowalski Gregory J.	30
Esposito Massimiliano	33	Kralj Samo	23
F		Kustova Elena	28
Fábián Balázs	25	L	
Feidt Michel	32	Lopez de Haro	
Fekete Tamás	26	Mariano	16
Fülöp Tamás	31	Lőrincz János	19
		Lu Diannan	23

	Page number		Page number
M		S	
Magnanelli Elisa	20	Sadus Richard J.	27
Mariano Paolo Maria	21	Salamon Peter	20
Maruszewski Bogdan		Saluto Lidia	15
T.	15	Sciacca Michele	15
Maschke Bernhard	30	Sega Marcello	25
Mazzelli Federico	32	Sellitto Antonio	16
Meyer Georg	30	Simon Jean-Marc	28
Mialdun Aliaksandr	31	Struchtrup Henning	18
Morro Angelo	14	Svensden Bob	21
N		Szücs Mátyás	25
Novotny Jaroslav	29	T	
O		Takács Ádám	17
Oikonomou Thomas	17	Talata István	19
Öttinger Hans		Thalabard Simon	32
Christian	14	Tsallis Constantino	13
P		U	
Pande Gyanendra		Uzdin Raam	29
Nath	19	V	
Papenfuss Christina A.	18	Varbanov Petar	34
Pavelka Michal	18	Vazquez Federico	16
Polettini Matteo	22	Verhás József I.	25
Polishuk Ilya	27	W	
Poredos Alojz	34	Wachtel Artur	30
Povstenko Yuriy	18	Watanabe Gentaro	22
Proesmans Karel	29	Weinberg Kerstin	21
Průša Vít	14	Woodcock Leslie V.	27
Q		Y	
Quiñones-Cisneros		Yablonsky Grigoriy	30
Sergio E.	27	Z	
R		Zhu Lilin	17
Rahav Saar	23	Zhukovsky Konstantin	16
Rao Riccardo	30	Zimborás Zoltán	22
Restuccia Liliana	15		
Rogolino Patrizia	14		
Rubi Miguel	28		

NOTE

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