

# International Conference Thermocon2016

## Thermal Theories of continua: Survey and Developments



University of Messina, Sicily, Italy  
April 19th-22th, 2016

### Programme

**Tuesday, April 19th, 2016**

Accademia Peloritana dei Pericolanti hall, University of Messina  
Morning Session

**08:30-09:30 Registration**

**09:30-10:00 Open Ceremony**

**10:00-10:30 G. Lebon** (University of Liège, Belgium), Effective thermal conductivity in nanostructures: a review

**10:30-11:00 T. Ruggeri** (Bologna University, Italy), Non-linear maximum entropy principle for a polyatomic gas subject to the dynamic pressure

**11:00-11:30 Coffee Break**

**11:30-12:00 M. Fabrizio** (Bologna University, Italy), Thermodynamics of damage and fatigue by a phase field model

**12:00-12:30 V. Ciancio** (Messina University, Italy), A derivation of heat equation in the framework of classical irreversible thermodynamics with internal variables, describing thermal relaxation phenomena

**12:50-13:00 G. Beretta** (University of Brescia, Italy)  
Steepest entropy ascent and far non-equilibrium

**Tuesday, April 19th, 2016**  
**Accademia Peloritana dei Pericolanti hall**  
Afternoon Session

- 15:00 -15:30 B. T. Maruszewski** (Poznan University of Technology, Poland)  
*Thermomechanics of multiferroics*
- 15:30-16:00 S. Carillo** (Sapienza University of Roma, Italy)  
*Some new results on singular kernel problems in materials with memory*
- 16:00-16:20 S. Magazù** (University of Messina, Italy)  
*Fragility and complexity in biophysics systems*
- 16:20-16:40 M. Bettincourt** (University of Campinas, Brazil)  
*A thermodynamic consistent phase field model for structural damage and fatigue*
- 16:40-17:00 L. Restuccia** (University of Messina, Italy)  
*Temperature, heat transport and dislocations*

**Wednesday, April 20th, 2016**  
**Accademia Peloritana dei Pericolanti hall**  
Morning Session

- 09:00-09:30 Registration**
- 09:30-10:00 M. Grmela** (École Polytechnique Montréal, Canada)  
*Externally driven macroscopic systems: Dynamics versus Thermodynamics*
- 10:00-10.30 H. C. Öttinger** (ETH Zurich, Switzerland)  
*Irreversible dynamics, Onsager-Casimir symmetry, and an application to turbulence*
- 10:30-11.00 P. Ván** (HAS Wigner Research Centre for Physics, Budapest, Hungary)  
*Galilean relativistic fluid mechanics*
- 11:00-11:30 Coffee Break**
- 11:30-12:00 S. Preston** (Portland State University, Oregon, U.S.A.)  
*On the algebra and geometry of balance systems*
- 12:00-12:20 R. Kovács** (HAS Wigner Research Centre for Physics and BME, Budapest, Hungary)  
*The connection between kinetic and continuum theory in the aspect of NaF heat pulse experiments*
- 12:20-12:40 M. Pavelka** (New Technologies University, Pilsen, Czech Rep.)  
*A hierarchy of Poisson brackets*
- 12:40-13:00 V. Klika** (Technical University of Prague, Czech Rep.)  
*Oscillations in Belousov-Zhabotinskii gels as the effect of non-linear mechano-chemical coupling*

**Wednesday, April 20th, 2016**

**Accademia Peloritana dei Pericolanti hall**

Afternoon Session

(dedicated to 80<sup>th</sup> birthday of Prof. W. Muschik and 70<sup>th</sup> birthday of Prof. V. Ciancio)

**15:00-15:30 C. Papenfuss** (HTW Berlin - University of Applied Sciences, Berlin, Germany)  
*A presentation of scientific activity of Prof. Wolfgang Muschik*

**15:30-16:00 L. Restuccia** (University of Messina, Italy)  
*A presentation of scientific activity of Prof. Vincenzo Ciancio*

**16:00-16:30 S. Hess** (Technical University of Berlin, Germany)  
*Boundary condition and extended constitutive relations for spin-flow coupling in dipolar fluids*

**16:30-17:00 Coffee Break**

**17:00-17:30 J. Verhás** (Budapest University of Technology and Economics, Hungary)  
*Non-equilibrium thermodynamics beyond linearity. Sliding friction.*

**17:30-18:00 K. H. Hoffmann** (Technical University of Chemnitz, Germany)  
*Thermodynamics at the quantum level: the parametric harmonic oscillator*

**20.15 Social Dinner**

**Thursday, April 21th, 2016**

**Accademia Peloritana dei Pericolanti hall**

Morning session

**9:30-10:00 D. Jou** (Universitat Autònoma de Barcelona, Spain)  
*Phononics and graded porous devices: steady states and thermal waves*

**10:00-10:30 B. Andresen** (University of Copenhagen, Denmark)  
*Maxwellian velocity distributions in slow time*

**10:30-11:00 V. Romano** (University of Catania, Italy)  
*Thermal effects due to charge transport in grapheme*

**11:00-11:30 Coffee Break**

- 11:30-11:50 M. S. Mongiovi** (University of Palermo, Italy)  
*Vortex diffusion in superfluid turbulence*
- 11:50-12:10 O. Muscato** (University of Catania, Italy)  
*Hydrodynamic model for silicon carbide semiconductors including crystal heating*
- 12:10-12:30 L. Saluto** (University of Palermo, Italy)  
*Thermodynamical description of vortex formation at the superfluid transition in  $^4\text{He}$*
- 12:30-12:50 T. Castiglione** (University of Catania, Italy)  
*Hydrodynamic modeling of electron transport in gated silicon nanowires transistors*
- 12:50-13:10 M. Sciacca** (University of Palermo, Italy)  
*Heat transport in laminar and turbulent superfluid helium*

**14:30- 20:00 Taormina Excursion**

**Friday, April 22th, 2016**  
**Accademia Peloritana dei Pericolanti hall**  
**Morning session**

- 09:00-09:15 L. Palese** (University of Bari, Italy)  
*Thermosolutal convection in a viscoelastic rotating Walters fluid*
- 09:15-09:30 A. Labianca** (University of Bari, Italy)  
*On the nonlinear stability of the thermodiffusive equilibrium for the magnetic Bénard problem*
- 09:30-09:50 C. Papenfuss** (HTW Berlin - University of Applied Sciences, Berlin, Germany)  
*Applications of the mesoscopic theory to fiber suspensions*
- 09:50-10:10 P. Vagner** (Charles University Praga, Czech Rep.)  
*Dusty gas model in the framework of Extended Irreversible Thermodynamics*
- 10:10-10:30 T. Fekete** (HAS Energy Research Inst., Budapest, Hungary)  
*The role of thermo-dynamics in structural integrity calculations of large scale pressure vessels*
- 10:30-10:50 K. Valanis** (Vancouver University, Washington, U. S. A.)  
*Quantum plasticity*
- 10:50-11:10 C. Giorgi** (University of Brescia, Italy)  
*Modelling of heat conduction via fractional derivatives*