

PROGRAM

OF THE FIFTH INTERNATIONAL SYMPOSIUM ON THE CASIMIR EFFECT

15 September, Sunday

17:00-19:00 **Registration** (Pastoral Cultural Center “Georgios”)

16 September, Monday

8:00-9:30 **Registration** (Pastoral Cultural Center “Georgios”)

9:30-11:00 **Morning Session 1**

9:30-9:40 **Introductory**

Chairperson: **V. M. Mostepanenko**

9:40-10:20 **K. Milton** (University of Oklahoma, USA)

Self-propulsion and torque on an inhomogeneous object out of thermal equilibrium.

10:20-11:00 **E. R. Bezerra de Mello** (Universidade Federal da Paraíba, Brazil)

Induced current in high-dimensional AdS bulk in the presence of a cosmic string and brane.

11:00-11:30 **Coffee break**

11:30-12:50 **Morning Session 2**

Chairperson: **G. L. Klimchitskaya**

11:30-12:10 **M. Bordag** (Joint Institute for Nuclear Research, Russia; Leipzig University, Germany)

Casimir effect with an unstable mode.

12:10-12:50 **R. Podgornik** (University of the Chinese Academy of Sciences, China)

Casimir effect in soft condensed matter - flashbacks and perspectives.

12:50-15:00 **Lunch**

15:00-16:40 **Afternoon Session 1**

Chairperson: **E. R. Bezerra de Mello**

15:00-15:40 **C. Henkel** (University of Potsdam, Germany)

Material thoughts about the thermal Anomaly -- Nothing is more attractive.

15:40-16:20 **M. Boström, S. Pal, A. Gholamhosseinian, J. J. Marchetta, R. Corkery, I. Brevik** (Ensemble3 Center of Excellence and University of Warsaw, Poland)

Temperature-distance relations in Casimir physics.

16:20-16:40 **J. Alexandre, D. R. Backhouse** (King's College London, England)

Tunnelling, the Casimir effect and a cosmological bounce.

16:40-17:10 **Coffee break**

17:10-18:50 Afternoon Session 2

Chairperson: **T. Emig**

17:10-17:30 D. K. Campbell (Boston University, USA)

Seeking the Casimir Energy.

17:30-17:50 I. G. Pirozhenko (Joint Institute for Nuclear Research, Russia)

On QFT with null boundaries.

17:50-18:10 K. Suzuki, D. Fujii, K. Nakayama (Japan Atomic Energy Agency, Japan)

Casimir effect at finite density.

18:10-18:30 O. Kotov (Universidad Autónoma de Madrid, Spain)

Cavity-induced ground-state energy modifications: Hopfield versus Casimir-Lifshitz approach.

18:30-18:50 K. Nakayama (Institute of Physical and Chemical Research, Japan)

Casimir energy on the lattice spacetime.

19:00-21:00 Reception

17 September, Tuesday

9:00-11:00 Morning Session 1

Chairperson: **R. Podgornik**

9:00-9:40 U. Mohideen (University of California, Riverside, USA)

Precision Casimir force measurements with graphene.

9:40-10:20 N. Khusnutdinov (Universidade Federal do ABC, Brazil)

Polarization tensor approach for Casimir effect.

10:20-11:00 G. L. Klimchitskaya, C. C. Korikov, V. M. Mostepanenko (Pulkovo Observatory of the Russian Academy of Sciences and Peter the Great St. Petersburg Polytechnic University, Russia)

Nonequilibrium Casimir pressure between graphene-coated plates: Quantum field theoretical approach.

11:00-11:30 Coffee break

11:30-12:50 Morning Session 2

Chairperson: **N. Khusnutdinov**

11:30-12:10 P. Rodriguez-Lopez (Universidad Rey Juan Carlos, Spain)

Kubo versus QFT models for Graphene conductivity and their effect on Casimir effect.

12:10-12:50 V. M. Mostepanenko, G. L. Klimchitskaya (Pulkovo Observatory of the Russian Academy of Sciences and Peter the Great St. Petersburg Polytechnic University, Russia)

Recent solution to the Casimir puzzle awaits its experimental confirmation.

12:50-15:00 Lunch

15:00-16:40 Afternoon Session 1

Chairperson: **L. Woods**

15:00-15:40 R. Esquivel Sirvent (National University of Mexico, Mexico)

Probing time crystals with Casimir forces.

15:40-16:20 P. A. Maia Neto (Federal University of Rio de Janeiro, Brazil)

The Casimir interaction in electrolyte solutions.

16:20-16:40 **L. Chen** (North China Electric Power University, China)
Casimir effect in topological systems.

16:40-17:10 **Coffee break**

17:10-19:10 **Afternoon Session 2**

Chairperson: **M. Bordag**

17:10-17:30 **W. Broer, B. S. Lu, R. Podgornik** (Hefei University of Technology, China)
Casimir torque with cholesteric liquid crystals and the spiral staircase model.

17:30-17:50 **D. Fujii, K. Nakayama, K. Suzuki** (Japan Atomic Energy Agency, Japan)
Casimir effect in dual chiral density waves.

17:50-18:10 **Š. Gabaj** (Humboldt-Universität zu Berlin, Germany)
Tailoring quantum friction with geometry and material properties.

18:10-18:30 **B. Shapiro** (Technion - Israel Institute of Technology, Israel)
Instabilities in quantum friction.

18:30-18:50 **J. Fiedler** (University of Bergen, Norway).
pH-sensitive Casimir-Polder energies and relaxation dynamics in colloidal systems.

18 September, Wednesday

9:00-10:20 **Morning Session**

Chairperson: **C. Villarreal**

9:00-9:40 **T. Emig** (Université Paris-Saclay, France)
A novel multiple scattering expansion for EM waves in Casimir physics.

9:40-10:20 **L. Woods** (University of South Florida, USA)
New developments in Casimir physics inspired by novel materials.

11:00-15:00 **Excursion**

19 September, Thursday

9:00-11:00 **Morning Session 1**

Chairperson: **C. Henkel**

9:00-9:40 **G. Palasantzas** (University of Groningen, the Netherlands)
Casimir forces between real materials towards actuation dynamics of devices.

9:40-10:20 **H. H. Hillmer, B. Elsaka, Ph. Kästner, E. Friedmann, C. Backes, J. Adam, S. Buhmann** (University of Kassel, Germany)
Self-assembly of metallic MEMS using Casimir forces: Fabrication, simulation and characterization.

10:20-11:00 **V. Svetovoy** (Frumkin Institute of Physical Chemistry and Electrochemistry, Russia)
Measurement of adhesion and dispersion forces between rough surfaces near the contact by the method of adhered cantilever.

11:00-11:30 **Coffee break**

11:30-12:50 **Morning Session 2**

Chairperson: **K. Milton**

11:30-12:10 **P. Brax** (IPhT Université Paris-Saclay, France)

Casimir forces in CFT with defects and boundaries.

12:10-12:50 **R. I. P. Sedmik** (Technische Universität Wien, Austria)

Force metrology as a window to new physics: fluctuation phenomena and the dark sector.

12:50-15:00 **Lunch**

15:00-16:40 **Afternoon Session 1**

Chairperson: **G. Palasantzas**

15:00-15:40 **A. Rodriguez** (Princeton University, USA)

Speed-of-light limitations and scaling laws in fluctuational electrodynamics.

15:40-16:20 **T. Shegai** (Chalmers University of Technology, Sweden)

Casimir self-assembly as a tunable microcavity and polaritonic platform.

16:20-16:40 **G. L. Klimchitskaya, A. S. Korotkov, V. V. Loboda, V. M. Mostepanenko**

(Pulkovo Observatory of the Russian Academy of Sciences and Peter the Great St. Petersburg Polytechnic University, Russia)

Impact of surface roughness on the stability of nanoelectromechanical pressure sensors in the Casimir regime.

16:40-17:10 **Coffee break**

17:10-17:50 **Afternoon Session 2**

Chairperson: **G. Cleaver**

17:10-17:30 **Y. Ren, Y. Yang, W. Broer, F. Xue** (Hefei University of Technology, China)

Enhanced force sensing at short distance by Casimir force for a levitated ferromagnet near superconducting plate.

17:30-17:50 **G. A. Vagli, T. Tian, F. Naef, H. Jinno, K. Celebi, E. J. G. Santos, C.-J. Shih** (ETH Zürich, Switzerland)

Strong repulsive Lifshitz-van der Waals forces on suspended graphene.

17:50-18:50 **Poster Session**

R. Bakhshandehseraji, G. Palasantzas (University of Groningen, the Netherlands)

Nanoscale surface roughness effect on DLVO forces.

H. Hassanzadeh (University of Groningen, the Netherlands)

Casimir force control by reversible amorphous-crystalline phase transitions.

M. Hořková, O. V. Kotov, B. Küçüköz, T. O. Shegai (Chalmers University of Technology, Sweden)

Thermal fluctuations in Casimir self-assembly.

B. Küçüköz (Chalmers University of Technology, Sweden)

Non-planar self-assembled microcavities: Casimir interaction exceeds mechanical stiffness.

G. Chavez Ponce de Leon (University of Groningen, the Netherlands)

Casimir forces and topological insulators. How to make it happen?

Y. Ren, Y. Yang, W. Broer, F. Xue (Hefei University of Technology, China)

Magnetic levitated Casimir force sensor for tests of fundamental physics.

N. Schüler (University of Kassel, Germany)

Rotational quantum friction via spontaneous decay.

K. Tsoukalas, P. T. Kristensen, S. Stobbe (Technical University of Denmark, Denmark)
Non-contact Casimir latching device.

19:00-22:00 **Symposium Dinner**

20 September, Friday

9:00-11:00 **Morning Session 1**

Chairperson: **F. Intravaia**

9:00-9:40 **Bing Sui Lu** (Thammasat University, Thailand)

Resonant Casimir-Polder interaction between an excited atom and a topological insulator.

9:40-10:20 **M. Gorban** (Baylor University and Rhea Space Activity, USA)

The asymmetric dynamical Casimir effect.

10.20-11:00 **V. V. Dodonov** (University of Brasília, Brazil)

How to simulate the Dynamical Casimir Effect in a laboratory.

11:00-11:30 **Coffee break**

11:30-12:50 **Morning Session 2**

Chairperson: **U. Mohideen**

11:30-12:10 **C. Villarreal** (Universidad Nacional Autónoma de México, México)

Casimir grids, heat flux networks, and Abrikosov vortex lattices.

12:10-12:50 **F. Intravaia** (Humboldt Universitaet zu Berlin, Germany)

On the physics of nonequilibrium atom-surface interactions.

12:50-15:00 **Lunch**

15:00-16:40 **Afternoon Session 1**

Chairperson: **R. Esquivel Sirvent**

15:00-15:40 **M. Good** (Nazarbayev University, Kazakhstan)

Casimir acceleration temperature (CAT).

15:40-16:00 **I. Klich** (University of Virginia, USA)

Quantum measurements and fluctuation forces.

16:00-16:20 **R. Miao** (Sun Yat-sen University, China)

Casimir effect and holographic dual of wedges.

16:20-16:40 **V. M. Mostepanenko** (Pulkovo Observatory of the Russian Academy of Sciences and Peter the Great St. Petersburg Polytechnic University, Russia)

A few remarks concerning application of the Lifshitz theory to calculation of the Casimir-Polder interaction.

16:40-17:10 **Coffee break**

17:10-18:10 **Afternoon Session 2**

Chairperson: **V. V. Dodonov**

17:10-17:30 **G. Cleaver, A. Kar, R. Radhakrishna** (Baylor University, USA)

Stabilizing extra dimensions: Revisiting the role of non-minimal bulk scalar fields and Casimir energy in RS1

17:30-17:50 **J. J. Marchetta, M. Gorban, M. Boström** (Ensemble3 Center of Excellence, Poland)

Impact from concentric sphere Lifshitz physics on water condensation.

17:50-18:10 **A. Hadi, M. Bruneau, J. Lecoffre, Q. Bouton, N. Fabre, F. Perales, M. Ducloy, G. Dutier** (Université Sorbonne Paris Nord, France)

Towards precise measurement of the Casimir-Polder interaction.

18:10-18:30 **A. Squarcini** (Universität Innsbruck, Austria)

The Casimir effect in wetting layers.

18:30-18:40 **Closure**