

KITP Conference: Quantum and Thermal Electrodynamical Fluctuations in the Presence of Matter: Progress and Challenges

(Jul 11-14, 2022)

Coordinators: Ricardo Decca, David Dean, Alejandro Rodriguez, Lilia Woods

Monday, Jul 11, 2022

8:50am Lars Bildsten (KITP)

[Welcome\[Video\]](#)

9:00am Rudi Podgornik (UCAS)

[Qualitative chirality effects in the Casimir-Lifshitz torque in birefringent multilayer system\[Video\]\[CC\]](#)

9:45am Jeremy Munday (UC Davis)

[Controlling the Casimir effect with novel materials and geometries\[Video\]\[CC\]](#)

10:30am

Morning break

11:00am Bong Jae Lee (KAIST)

[Experiments of near-field thermal radiation and energy conversion\[Slides\]\[Video\]\[CC\]](#)

11:45am Yi Zheng (Northeastern)

[Cost-effective multifunctional photonic metamaterial for energy applications\[Video\]\[CC\]](#)

Lunch

2:00pm Zhuomin Zhang (Georgia Tech)

[Polarized thermal emission from metamaterials described by Stokes parameters based on fluctuational electrodynamics\[Slides\]\[Video\]\[CC\]](#)

2:45pm Haokun Li (Berkeley)

[Phonon Coupling & Mechanical Stable Equilibrium through Quantum Fluctuations\[Video\]\[CC\]](#)

3:30pm

Afternoon break

4:00pm Sheng Shen (CMU)

[Nanoplasmonic thermal emission in near- and far-fields\[Video\]\[CC\]](#)

4:45pm Shanhui Fan (Stanford)

[Aspects of thermal radiation: time-modulated system, and chemical potential for photons\[Video\]\[CC\]](#)

5:30pm

SHUTTLE TO BWSCI

Tuesday, Jul 12, 2022

9:00am Franco Nori (RIKEN)

[Dynamical Casimir effect in superconducting circuits\[Video\]\[CC\]](#)

9:45am Gabriel Dutier (LPL / USPN)

[Cold atoms for Casimir-Polder measurements\[Video\]\[CC\]](#)

10:30am

Morning break

11:00am Sol Carretero Palacios (UAM)

[Quantum levitation and optical resonators\[Video\]\[CC\]](#)

11:45am Victoria Esteso Carrizo (Univ. de Sevilla)

[Effect of the optical response of nanostructured materials on the Casimir-Lifshitz force\[Video\]\[CC\]](#)

Lunch

2:00pm All Participants

[Poster highlights \(1 slide/3 highlight for posters\)\[Slides\]\[Video\]\[CC\]](#)

2:45pm Carsten Henkel (Univ. Potsdam)

[Additional Boundary Condition and Entanglement of Fluctuations\[Slides\]\[Video\]\[CC\]](#)

3:30pm

Afternoon break

4:00pm Kim Milton (Oklahoma)	Quantum and Casimir friction: energetics and forces [Slides] [Video] [CC]
4:45pm Fernando Lombardo (U. Buenos Aires)	Traces of Quantum Friction in the Accumulated Geometric Phase [Slides] [Video] [CC]
5:30pm	Reception
6:00pm	Dinner
8:00pm	Shuttle to BWSCI

Wednesday, Jul 13, 2022

9:00am Irina Pirozhenko (JINR)	QED quantum fluctuations in the presence of half-spaces filled with topological insulators [Slides] [Video] [CC]
9:45am Maria Belen Farias (Univ. of Luxembourg)	Casimir force between Weyl semimetals in a chiral medium [Slides] [Video] [CC]
10:30am	Morning break
11:00am Pramod Reddy (Michigan)	Radiative Heat Transfer at the Nanoscale [Embargoed]
11:45am Philippe Ben-Abdallah (Inst. D'Optique)	Near field radiative heat transfer in many-body systems [Slides] [Video] [CC]
	Lunch
2:45pm Ricardo Decca (IUPUI)	Measurement of the Casimir interaction at large separations and development of new sensors [Video] [CC]
3:30pm	Afternoon break
4:00pm Gabriele De Chiara (Queen's Belfast)	A Bose-Einstein condensate thermal engine [Video] [CC]
4:45pm Kanu Sinha (Arizona State)	Engineering Casimir-Polder Interactions in Nanophotonic Systems [Video] [CC]
5:30pm	Reception
6:00pm	Dinner
8:00pm	Shuttle to BWSCI

Thursday, Jul 14, 2022

9:00am Galina Klimchitskaya (St. Petersburg Polytechnic Univ.)	Electromagnetic response of graphene and role of evanescent waves in resolution of the Casimir puzzle [Slides] [Video] [CC]
9:45am Umar Mohideen (UC Riverside)	Zero-point photon scattering in real materials: lessons from precision Casimir force measurements [Video] [CC]
10:30am	Morning break
11:00am Paulo Maia Neto (UFRJ)	Probing the screening of the Casimir interaction with optical tweezers [Video] [CC]
11:45am Jian Sheng Wang (National University of Singapore)	Non-equilibrium Green's function method for energy, momentum, and angular momentum transfer mediated by photons [Video] [CC]
	Lunch
2:00pm Francesco Intravaia (Humboldt Univ.)	Assessing the effects of material-modified electromagnetic fluctuations [Video] [CC]

2:45pm David Bishop (BU)

[Casimir Metrology and the Casimir Energy\[Video\]\[CC\]](#)

3:30pm

Afternoon break

4:00pm Gang Chen (MIT)

[Absorption at liquid-vapor interface: photomolecular evaporation\[Video\]\[CC\]](#)

4:45pm Zubin Jacob (Purdue)

[Pico-electrodynamics inside matter\[Video\]\[CC\]](#)

5:30pm **CONFERENCE END SHUTTLE TO BWSCI *Also available to SB Airport and SB Airbus, Goleta location. (See Registration Desk BEFORE THURSDAY to sign up.)**