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Unruh Acceleration Radiation, Vacuum Entanglement and Relativity

PCTS virtual workshop

Organizers: Marlan Scully and William Unruh

Zoom Information: https://princeton.zoom.us/j/ 92424499144 Meeting ID: 924 2449 9144

Tuesday	December 8, 2020	Princeton Time (EST) (GMT-5)
Time	**Speaker**	**Title**
8:50-9:00	**Marlan Scully** **William Unruh**	**Welcome from the organizers**
First Session	**Moderator:**	**Marlan Scully**
9:00-9:30	**Marlan Scully** *Texas A&M, Princeton, and Baylor Universities*	Acceleration Radiation from a Quantum Optical Perspective
9:30-10:00	**Anatoly Svidzinsky** *Texas A&M University*	Unruh and Cherenkov radiation from a negative frequency perspective and causality in quantum optics
10:00-10:30	**Arash Azizi** *Texas A&M University*	Unruh radiation and Causality
10:30-11:00	**Break**	
Second Session	**Moderator:**	**Anatoly Svidzinsky**
11:00-11:30	**Carlos Ordóñez** *University of Houston; Rice University*	Near-horizon conformal aspects of acceleration radiation detected by a two-level atom freely falling into static or rotating black holes
11:30-12:00	**Stephen Fulling** *Texas A&M University*	What Is Still to be Learned about Classical Acceleration Radiation?
12:00-12:30	**Wolfgang Schleich** *University of Ulm, Germany*	Tunneling in an inverted harmonic oscillator viewed from phase space

Wednesday	December 9, 2020	Princeton Time (EST) (GMT-5)
Time	**Speaker**	**Title**
First Session	**Moderator:**	**Stephen Fulling**
9:00-9:30	**Michael Duff** *Imperial College London;* *Texas A&M University*	Hawking temperature from higher dimensional embedding
9:30-10:00	**Atsushi Higuchi** *University of York, UK*	The Unruh effect in interacting scalar field theory
10:00-11:00	**Edward Witten** *Institute for Advanced Study*	Some Comments on Energy Inequalities
		Note: this talk addresses issues of entanglement entropy, of interest to many of us; if you are interested, you may use the zoom information below* to access this talk.
Second Session	**Moderator:**	**William Unruh**
11:00-11:30	**Freyja Ullinger** *University of Ulm, Germany*	The event horizon and the logarithmic phase singularity in the inverted harmonic oscillator
11:30-12:00	**Gary Rozenman** *Tel-Aviv University, Israel*	Black Holes in Phase Space and Logarithmic Phase Singularity in Surface Gravity Water Waves
12:00-12:30	**Eduardo Martin-Martinez** *University of Waterloo*	The Unruh effect in slow motion
12:30-13:00	**Christopher Pope** *Texas A&M University;* *Cambridge University*	Black Holes, The Gibbs Surface and Negative Temperatures

***https://theias.zoom.us/j/89544657610?pwd=QWNVSWVCbFZNUGdrYTVhYWVPZzdLQT09**

Thursday	December 10, 2020	Princeton Time (EST) (GMT-5)
Time	**Speaker**	**Title**
First Session	**Moderator:**	**Arash Azizi**
9:00-9:30	**Franco Nori** *RIKEN, Saitama, Japan;* *The University of Michigan, Ann Arbor*	Theoretical prediction and subsequent observation of the dynamical Casimir effect in a superconducting circuit
9:30-10:00	**Salvatore Savasta** *University of Messina, Italy*	Dynamical Casimir Effect: fully quantum-mechanical and non-perturbative description of both the cavity field and the oscillating mirror
10:00-10:30	**Robert Wald** *The University of Chicago*	The Particle and Energy Cost of Entanglement of Hawking Radiation with the Final Vacuum State
10:30-11:00	**Break**	
Second Session	**Moderator:**	**Christopher Pope**
11:00-11:30	**George Matsas** *São Paulo State University, Brazil*	On the observability of the Unruh effect in the laboratory
11:30-12:00	**Jeff Steinhauer** *Technion – Israel Institute of Technology*	Spontaneous Hawking radiation and beyond: Observing the time evolution of an analogue black hole
12:00-12:30	**William Unruh** *University of British Columbia;* *Texas A&M University*	Measurement of Acceleration Radiation in BEC Analogue system
12:30-13:00	**Silke Weinfurtner** *University of Nottingham, UK*	Quantum simulators for fundamental physics