

Session Program

11-16 Dec 2022



24th Australian Institute of Physics Congress

AIP: Theoretical and Mathematical

Monday 12 December

11:00

AIP: Theoretical and Mathematical: TMP 1

Session | **Location:** Adelaide Convention Centre, Room R3 | **Convener:** Margaret Reid

11:00-11:30

Entropy, and topological phase analysis in quantum simulations of the early universe with finite temperature effects

Speaker

Prof. Peter Drummond

11:30-11:45

Surface gravity and information loss

Speaker

Sebastian Murk

11:45-12:00

Scattering Amplitudes of Massive Spin-2 Kaluza-Klein Particles

Speaker

Dipan Sengupta

12:00-12:15

Progress toward uncovering the spin of a vortex

Speaker

Emil Johansen

12:15-12:30

A possibilistic no-go theorem on the Wigner's friend paradox

Speaker

Marwan Haddara

12:30

Wednesday 14 December

11:00

AIP: Theoretical and Mathematical: TMP 2

Session | **Location:** Adelaide Convention Centre, Room R2 | **Convener:** Murray Batchelor

11:00–11:30 **Topology, quantum gravity and particle physics**

Speaker

Archil Kobakhidze

11:30–11:45

Bohmian trajectories and nonlocality in relativistic two-photon interactions

Speaker

Joshua Foo

11:45–12:00

Quantum Central Limit Theorems, Emergence of Classicality and Time-dependent Differential Entropy

Speaker

Tien Kieu

12:00–12:15

Particle-like Interactions of Two-Dimensional Solitary Waves in Continuous Media

Speaker

Yury Stepanyants

12:15–12:30

Universal Behavior in the Stock Market - Order in Chaos

Speaker

Ayse Kizilersu

12:30

14:00

AIP: Theoretical and Mathematical: TMP 3

Session | **Location:** Adelaide Convention Centre, Room R2 | **Convener:** Xiaji LIU

14:30–14:45

Grassmann Phase Space Theory for the BEC/BCS Crossover in Cold Fermionic Atomic Gases

Speaker

Bryan Dalton

15:00–15:15

Fermions with long and finite-range interactions on a quantum ring

Speaker

Cedric Simenel

15:15–15:30

On two particular N-state generalizations of the quantum Ising model

Speaker

Murray Batchelor

15:30

16:00

AIP: Theoretical and Mathematical: TMP 4

Session | **Location:** Adelaide Convention Centre, Room R2 | **Convener:** Prof. Archil Kobakhidze

16:00-16:15

Black Hole Thermodynamics in de Sitter Spacetimes

Speaker

Fil Simovic

16:15-16:30

Physical black holes in modified theories of gravity

Speaker

Sebastian Murk

16:30-16:45

Unruh-DeWitt Detectors with Relativistic Centre of Mass

Speaker

Evan Gale

16:45-17:00

Quantum asymmetry between space and time: Phenomenological emergence of Lorentz invariance

Speaker

Dr Fatema Tanjia

17:00-17:15

Quantised mass-energy effects in a particle detector

Speaker

Carolyn Wood

17:15-17:30

Bandlimited quantum fields and their continuous and discrete properties

Speaker

Dominic Lewis

17:30