

**Exploring the Quantum Boundaries:
an Odyssey into the gravity related collapse models**

INFN-LNF, Frascati, in mixed modality (presence and online), 12-14 June 2024

Wednesday 12th June

Aula Salvini

Chair C. Curceanu

9:00 – 9:30 Registration

9:30 – 10:00 Welcome (LNF Director Fabio Bossi and Catalina Curceanu)

10:00 – 10:30 Alessio Avella, Nonlocality Limits from Relativistic Independence

10:30 – 11:00 T.P. Singh (online), Spontaneous localisation from a coarse-grained deterministic and non-unitary dynamics

11:00 – 11:30 Coffee break

11:30 – 12:00 Aurelian Isar, Gaussian quantum entanglement in curved spacetime.

12:00- 12:30 Aleksander Khreptak, Mesons in Nuclear Medium: Exploring Quantum Dynamics and Bound states

12:30 – 13:00 Francesco Artibani, New CdZnTe detectors for exotic atoms research

13:00 – 13:30 Andrea Addazi (online), Thinking about the measurement problem, spin statistics and naturalness

13:40 – 15:00 Lunch break

Aula Seminari

Chair: F. Napolitano

15:00 – 15:30 Francesco Sgaramella, Silicon Drift Detectors in Modern Quantum Experiments: Investigating the Pauli Exclusion Principle

15:30 – 16:00 Simone Artini, Characterizing the spontaneous collapse of a wave function through entropy production

theory 16:00 – 16:30 Coffee Break

16:30 – 17:00 Kristian Piscicchia (TBC), Phenomenological investigation of the interplay between Quantum and Gravity at LNGS, an overview

17:00 – 17:30 Lajos Diosi (online) , Will quantum theory be different in the macro-world?

Thursday 13th June

Aula Salvini

Chair: A. Isar

10:00 – 10:30 R. Cerulli, Results from the DAMA/LIBRA experiment

10:30 – 11:00 D. Braun (online), The Twin-World road to reality in quantum mechanics

11:00 – 11:30 Coffee Break

11:30 – 12:00 Sandro Donadi, The Diosi-Penrose model and its experimental tests

12:00 – 12:30 Simone Manti, Cancellation Effects in the Spontaneous Collapse Radiation Rate at Low Energy Limit

12:30 – 13:00 Fabrizio Napolitano, Machine Learning with the VIP-2 experiment

13:00 – 13:30 Antonino Marciano (online), Stochastic Ricci flow: emerging complexity in quantum and analog gravity

13:30 – 15:00 Lunch

Aula Salvini

Chair: Kristian Piscicchia

15:00 – 15:40 Sir Roger Penrose (online), Relativistic gravitationally induced wave-function collapse: its curiously retro-causal nature.

15:40 – 16:10 Jerome Martin, CSL and Cosmic Inflation

16:10 – 16:30 Coffee Break

16:30 – 17:00 Giovani Amelino Camelia, Quantum Gravity Boundaries

17:00 – 17:30 Nicola Bortolotti, Probing quantum gravity through high sensitivity spin-statistics tests

20:00 Social Dinner

Friday 14th June

Aula Salvini

Chair: Sandro Donadi

10:00 – 10:30 Claudio Paganini, The conceptual underpinning of collapse models derived from Causal Fermion Systems

10:30 – 11:00 Felix Finster (online), Causal fermion systems as an effective collapse theory

11:00 – 11:30 Coffee Break

11:30 – 12:30 E. Pace, M. Benfatto and L. De Paolis, Biophotons, a Hard Problem

12:30 – 13:00 Daniel Sudarsky (online), Primordial fluctuations, the gravity-quantum interface, and collapse theories.

13:00 – 13:30 Discussions and closing