

Non-Markovian Quantum Dynamics -- Palazzone di Cortona 24-28 August 2015

Monday 24 August

15:50 Opening

Session I: Old and new perspectives (chairperson: Matteo)

16:00 **Jyrki Piilo** *Non Markovian quantum jumps*

16:30 **Bassano Vacchini** *Classical versus quantum non-Markovianity*

17:00 **A. Mandarino:**

17:15 - 17:30 COFFEE BREAK

Session II: Quantum correlations in non-markovian environments (chairperson: Matteo)

17:30 **Rosario Lo Franco** *Recent results on spontaneous long-time preservation of entanglement and nonlocality under non-Markovian conditions*

18:00 **Matteo Bina** *Non-Markovian memory effects and revivals of nonclassicality with classical stochastic environments*

18:15 **Jacopo Trapani** *Dynamics of quantum correlations for continuous variable systems interacting with classical environments*

19:30 Dinner @ Palazzone

21:00 Ferruccio Busoni and the form of Toccata (chairperson: Paola Verrucchi)

Chiara Montelatici *Non senza fatica si giunge al termine* (piano concert)

Tuesday 25 August

Session III: Fundamentals (chairperson: Sabrina)

10:00 **Heinz-Peter Breuer** *Non-Markovian quantum dynamics of open systems*

10:30 **Jens Eisert** *Divide and forget*

11:00 **Andrea Mari** *Some ideas and questions about non-Markovianity*

11:15 - 11:45 COFFEE BREAK

Session IV: Fundamentals (continued) (chairperson: Sabrina)

11:45 **Dariusz Chruscinski** *On admissible memory kernels for random unitary qubit evolution*

12:15 **Walter Strunz** *Non-Markovian quantum dynamics from a total state point of view*

12:45 **Francesco Plastina** *Geometrical aspects of non-Markovianity*

Non-Markovian Quantum Dynamics -- Palazzone di Cortona 24-28 August 2015

13:00 - 16:00 LUNCH BREAK

Session V: Dynamics (chairperson: Sabrina)

16:00 Giovanna Morigi *Dynamics of atoms in presence of long-range forces and dissipation*

16:30 Marco Genoni *Quantum cooling and squeezing of a levitating nanosphere via time-continuous measurements and feedback*

16:45 John Gould *Total correlations of the diagonal ensemble herald the many-body localization transition*

17:15 Kimmo Luoma *Discrete dynamics and non-Markovianity*

17:30 - 18:00 COFFEE BREAK

Session VI: Dynamics (continued) (chairperson: Sabrina)

18:00 Mauro Paternostro *Assessing non-Markovianity via a temporal Bell-like inequality!*

18:15 Giacomo Guarnieri *Energy Backflow in non-Markovian open quantum systems*

18:30 Giacomo De Palma *The necessity of eigenstate thermalisation*

Wednesday 26 August

Session VII: Dynamics (continued) (chairperson: Matteo)

10:00 Paola Verrucchi *Dynamics of an oscillator in a large- S magnetic environment*

10:30 Gianluca Giorgi *Quantum Darwinism and non-Markovian dissipative dynamics from quantum phases of the spin-1/2 XX mode*

11:00 Claudia Benedetti *Dynamics of noisy quantum walks*

11:15 - 11:45 COFFEE BREAK

Session VIII: Quantum probes (chairperson: Matteo)

11:45 Massimo Borrelli *Quantum Probes for Complex systems*

12:15 Francesco Cosco *Quantum probing of Bose-Hubbard model via memory effects*

12:30 Matteo Rossi *Entangled quantum probes for classical environmental noise*

12:45 Johannes Nokkala *Complex quantum networks as structured environments: engineering and probing*

13:00 - 16:00 LUNCH BREAK

16:00 Dictionary Session (chairperson: Matteo)

Non-Markovian Quantum Dynamics -- Palazzone di Cortona 24-28 August 2015

Thursday 27 August

Session IX: Measuring/ detecting (chairperson: Jyrki)

10:00 Fabio Sciarrino *Experimental observation of weak non-Markovianity*

10:30 Gerardo Adesso *Quantifying non-Markovianity via the quantum interferometric power*

11:00 Antti Karlsson *Experimental demonstration of efficient superdense coding with photons in the presence of non-Markovian noise*

11:15 - 11:45 COFFEE BREAK

Session X: Thermodynamics (chairperson: Jyrki)

11:45 Francesco Buscemi *Statistics, dynamics, and the second law(s)*

12:15 Francesco Ciccarello *Landauer's principle in multipartite open quantum system dynamics*

12:45 Mikko Tukiainen *Thermodynamic meaning and power of non-Markovianity*

13:00 - 16:00 LUNCH BREAK

Session XI: Quantum mechanics of open quantum systems (chairperson: Jyrki)

16:00 Andrea Smirne *Metrological bounds for open quantum system dynamics*

16:30 Elsi Laine *Dynamics of incompatibility of quantum measurements in open systems*

17:00 Goktug Karpat *Controlling entropic uncertainty bound via non-Markovianity*

17:15 - 17:45 COFFEE BREAK

Session XII: Dynamical decoupling (chairperson: Jyrki)

17:45 Daniel Burgarth *Dynamical decoupling of quantum noise*

18:15 Carole Addis *Dynamical decoupling efficiency versus quantum non-Markovianity*

Non-Markovian Quantum Dynamics -- Palazzone di Cortona 24-28 August 2015

Friday 28 August

Session XIII: (chairperson: Vittorio)

10:30 Chiara Macchiavello *Detecting capacities of quantum channels*

11:00 Alessandro Ferraro *Reservoir engineering for cluster-state generation in optomechanical systems*

11:15 Matteo Rosati *Achieving the Holevo bound via a bisection decoding protocol*

11:15 - 11:45 COFFEE BREAK

Session XIV: (chairperson: Vittorio)

11:45 Massimo Palma *Cooperative emission in chiral systems*

12:15 Tommaso Tufarelli *Quantum plasmonics with blinking dots*

12:30 Closing

13:00 LUNCH

