

# OpenQMBP2023: New perspectives in the out-of-equilibrium dynamics of open many-body quantum systems



Contribution ID: 24

Type: **not specified**

## Post-selection-free Measurement-Induced Phase Transition in Driven Atomic Gases with Collective Decay

*Friday, June 23, 2023 12:00 PM (40 minutes)*

I will discuss the properties of a monitored ensemble of atoms driven by a laser field and in the presence of collective decay.

By varying the strength of the external drive, the atomic cloud undergoes a measurement-induced phase transition separating

two phases with entanglement entropy scaling sub-extensively with the system size. The critical point coincides with the transition

to a superradiant spontaneous emission. This setup is implementable in current light-matter interaction devices, and most notably,

the monitored dynamics is free from the post-selection measurement problem, even in the case of imperfect monitoring.

G. Passarelli, X. Turkeshi, A. Russomanno, P. Lucignano, M. Schirò, R. Fazio <https://arxiv.org/abs/2306.00841>

**Presenter:** FAZIO, Rosario (The Abdus Salam International Centre for Theoretical Physics)