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10 things you always wanted to know about non-Markovian open quantum systems

In this talk I will pose 10 questions on non-Markovian open quantum systems and present my view on their answers. These are questions that I have been asked many times during the last 10 years and often come from misunderstandings on what we actually mean with non-Markovian quantum dynamics. In so doing I will introduce some non-Markovianity measures [1]-[4] and discuss their interest for quantum technologies [4]. The formal analogy between open quantum system theory and entanglement theory described in Ref. [5] will be the leitmotiv of my presentation.

References:

[1] H.-P. Breuer, E.-M. Laine, J. Piilo, Phys. Rev. Lett., 210401 (2009). [2] A. Rivas, S.F. Huelga, and M.B. Plenio, Phys. Rev. Lett. 105, 050403 (2010). [3] B.-H. Liu, L. Li, Y.-F. Huang, C.-F. Li, G.-C. Guo, E.-M. Laine, H.-P. Breuer, and J. Piilo, Nat. Phys. 7, 931-934 (2011). [4] B. Bylicka, D. Chruściński and S. Maniscalco, Scientific Reports 4, 5720 (2014). [5] D. Chruściński and S. Maniscalco, Phys. Rev. Lett. 112, 120404 (2014).

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