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Attractor spaces of dissipative dephased random unitary evolution and quantum Darwinism

Nenad Balaneskovic
University of Technology Darmstadt, Germany

We discuss characteristic properties of Quantum Darwinism (QD) involving pure decoherence, dissipation and dephasing. In particular, we reconstruct and derive the structure of the corresponding dissipative dephased attractor spaces of our random unitary qubit-model of QD and investigate whether QD appears with respect to evolution based on non-Controlled-NOT (non-CNOT) unitary operations. We identify those attractor space structures that allow the most efficient storage of classical information about a system into its environment. Furthermore, we conclude that CNOT-type unitary operations appear to be well suited copy-machines when it comes to efficiently store the information about a system's pointer basis into the environment.

Biography

Nenad Balaneskovic has completed his PhD from University of Technology Darmstadt. From October 2011 till March 2016, he was a member of a research team focusing on Fundamentals of Quantum Mechanics, Quantum Information and Quantum Computation at the Institute of Applied Physics of the University of Technology in Darmstadt. His research interests include quantum networks and random unitary operations, quantum Darwinism and the emergence of classicality and numerical application of graph theory.

balaneskovic@gmx.net

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