Quantum Endophysics and Irreversibility of Entangled Systems

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A novel approach to describe entangled quantum systems is presented. It considers the process during which an apparently isolated system is disturbed by a distinct part of its environment from an internal viewpoint denoted as an endodescription (description of the endosystem). Such a description is formalized using complex four vectors to represent internal and external space time, respectively. A relation among the concepts of phase waves and internal time is derived in the framework of local Lorentz invariance. This relation provides a consistent description of an irreversible dynamic of the endosystem during entanglement, while the reversible Schrödinger dynamics of the system remain relevant exophysically. Empirical consequences for specific experimental configurations of two particle interferometry are indicated.