**Entropy Transfer of Quantum Gravity Information Processing**[1]
LASZLO GYONGYOSI, Budapest University of Technology and Economics, Hungarian Academy of Sciences, SANDOR IMRE, Budapest University of Technology and Economics — We introduce the term smooth entanglement entropy transfer, a phenomenon that is a consequence of the causality-cancellation property of the quantum gravity environment. The causality-cancellation of the quantum gravity space removes the causal dependencies of the local systems. We study the physical effects of the causality-cancellation and show that it stimulates entropy transfer between the quantum gravity environment and the independent local systems of the quantum gravity space. The entropy transfer reduces the entropies of the contributing local systems and increases the entropy of the quantum gravity environment. We discuss the space-time geometry structure of the quantum gravity environment and the local quantum systems. We propose the space-time geometry model of the smooth entropy transfer. We reveal on a smooth Cauchy slice that the space-time geometry of the quantum gravity environment dynamically adapts to the vanishing causality. We prove that the Cauchy area expansion, along with the dilation of the Rindler horizon area of the quantum gravity environment, is a corollary of the causality-cancellation of the quantum gravity environment.

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