

General Relativity and Quantum Cosmology

The quantum interest conjecture in (3+1)-dimensional Minkowski space

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The quantum inequalities, and the closely related quantum interest conjecture, impose restrictions on the distribution of the energy density measured by any time-like observer, potentially preventing the existence of exotic phenomena such as Alcubierre warp-drives or traversable wormholes. It has already been proved that both assertions can be reduced to statements concerning the existence or non-existence of bound states of a certain 1-dimensional quantum mechanical Hamiltonian. Using this approach, we will informally review a simple variational proof of one version of the Quantum Interest conjecture in (3+1)-dimensional Minkowski space.

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