Title: Electric fields and quantum wormholes

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Abstract: $\langle p \rangle A$ classical Einstein-Rosen bridge changes the topology of spacetime, allowing (for example) electric field lines to penetrate it. It has recently been suggested that in the bulk of a theory of quantum gravity, the quantum entanglement of ordinary perturbative quanta should be viewed as creating a quantum version of an Einstein-Rosen bridge between the quanta, or a $\hat{a} \in \alpha$ quantum wormhole $\hat{a} \in \infty$. For this $\hat{a} \in \alpha \in \mathbb{R} = EPR \hat{a} \in 0$ correspondence to make sense it then seems necessary for a quantum wormhole to allow (for example) electric field lines to penetrate it. I will discuss (within low-energy effective field theory) whether or not this happens.

Electric fields and quantum wormholes

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