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**How low can the energy density go?**

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Quantum fields can sometimes have negative energy density. In gravitational contexts, this threatens to permit both causality violations (such as traversable wormholes, warp drives, and time machines) and violations of the Second Law for black holes. I will discuss the thermodynamic principles that rule out such pathological situations. These principles have led us to an interesting lower bound on the energy flux, even for field theories in flat spacetime! This Quantum Null Energy Condition has recently been proven for general relativistic field theories.