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Collisions in AdS and the Quantum Null Energy Condition

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In this talk I will give an introduction to the Quantum Null Energy Condition (QNEC), which is a unique local energy condition conjectured to be valid for any QFT. QNEC relates the normal null energy condition (NEC) with the second functional null derivative of the entanglement entropy and was inspired from the second law of black hole thermodynamics, even though it is valid in QFTs without gravity. After this introduction I will present some sample computations in holography, where entanglement entropy can be computed using the dual geometry. These examples in particular includes regions in shock wave collisions, that were known to violate NEC, but are now found to saturate QNEC. I end with upcoming work on QNEC in 1+1D holographic CFTs, including leading order quantum corrections in the bulk.

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