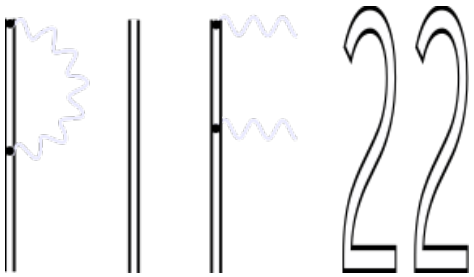

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Pair production of phonons in Bose-Einstein condensates with curved and expanding acoustic metric

Friday 2 September 2022 09:35 (25 minutes)

The large-scale structure of our Universe is seen as a result of quantum field fluctuations amplified by the evolution of space-time itself. Quantum fields in curved spacetimes have many tantalizing theoretical properties, for example particles being produced by the time-dependence of the geometry. I will describe how quantum fields in geometries with spacetime curvature and different cosmologies can be quantum-simulated with Bose-Einstein condensates in specifically designed trapping potentials and with time-dependent interaction strengths. New analytical results for relativistic scalar fields in cosmologies with 2+1 spacetime dimensions will be compared with recent experimental results.

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