"Quantum Noise Reduction in Advanced LIGO Using Squeezed Vacuum States"

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Squeezed vacuum injection, also known as "squeezing", is an upgrade for Advanced LIGO that is currently underway. By injecting squeezed vacuum states through the dark port of the interferometer, quantum noise can be reduced. For this upgrade, the goal is to achieve a 3dB quantum noise reduction above 100 Hz, where shot noise limits the Advanced LIGO sensitivity. This would improve the detector high-frequency sensitivity by a factor of $\sqrt{2}$, with negligible degradation at lower frequencies. In this talk I will give an overview of squeezing, the astrophysical implications of improving the detector's high-frequency performance, an update on the progress of the Advanced LIGO upgrade, and a look into future prospects.

*Lunch will be available*