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Squeezed Light Techniques for Gravitational Wave Detection

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Several kilometer long interferometers have been built over the past decade to search for gravitational waves of astrophysical origins. For the next generation detectors intra-cavity powers of several 100 kW are envisioned. The injection of squeezed light, a specially prepared quantum state, has the potential to further increase the sensitivity of these detectors. The technology behind squeezed light production has taken impressive steps forward in recent years. As a result a series of experiments is underway to prove the effectiveness of squeezed light and to make quantum technology a valid upgrade path for gravitational wave detectors.