

Abstract Submitted
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Beam splitter for squeezed light WEIZHI QU, JIAN SUN, Fudan University, EUGENIY MIKHAILOV, IRINA NOVIKOVA, College of William and Mary, HENG SHEN, Institute of QOQI, YANHONG XIAO, Fudan University — A conventional beam splitter can split classical light beams, but when used for squeezed light, the non-classical property is often lost at the beam splitter output. Here, we demonstrate a beam splitter made of moving atoms that can split squeezed light. Squeezed vacuum is generated by a degenerate four-wave-mixing (FWM) process in one location (Ch1) of a wall-coated Rb vapor cell, and then due to coherent diffusion of ground state coherence of the atoms within the cell, squeezed vacuum can be generated in a different location (Ch2) of the cell where no squeezing would exist without the presence of the Ch1, because of a relatively weak laser input. We attribute the phenomenon to FWM enhanced by coherence transfer. This effectively forms a beam splitter for squeezed light. We built a simple model that produces results in qualitative agreement with our experimental observations.

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