AMO Seminar

Friday, November 14, 2008
2:00 pm

Conference Room (123), Small Hall Physics Building

Quantum optics with an atomic vapor:
entangled images and quantum memories

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The entanglement properties of two beams of light can reside in subtle correlations that exist in the unavoidable quantum fluctuations of their amplitudes and phases. I will review recent advances in four-wave mixing in an atomic vapor which have enabled the production and the observation of "entangled images", that is to say beams which are entangled "point per point" across their transverse profiles. These beams can carry quantum information not only in their average profile but also in their spatial details.

Moreover, the four-wave mixing process makes it possible to delay the propagation of one of the entangled beams while retaining the quantum correlations, effectively acting as a short term memory for quantum images.