Waveguide Cavity with Atomic Mirrors and Applications

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The subject of photon transport inside a wave guide has received a lot of attention in recent years. In this talk, I shall present a system of atoms inside a one-dimensional waveguide and discuss how such a system can be used to study cavity QED effects. A generation of single-photon comb and quantum state construction will be discussed. I shall also discuss how a squeezed state can be used to achieve a high level of population inversion.