

# Narrowband hyper entangled photon generation using cigar shaped cold atomic ensembles and applications

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Hyper entangled photons with narrow bandwidth and long coherence time are necessary to achieve advanced quantum communication and super dense coding [1]. They can be generated by using Four wave mixing (FWM) in atomic cloud. In our experiment, we use advantageous cigar shaped atomic cloud (2D MOT) that is different from the conventional 3D MOT, we have observed EIT in our system. In this talk I will describe the properties, characterization, experimental progress and also the application of these entangled photons.

## References:

- 1) Hui Yan, Shanchao Zang, J.F. Chen, M.M.T.Loy, G.K.L Wong, and Shengwang Du, Phys.Rev.Lett. **106**, 033601 (2011).
- 2) Shanchao Zang, J. F. Chen, Chang Liu, Shuyu Zhou, M. M. T. Loy, G. K. L.Wong and Shengwang Du, Review of Scientific Instruments, **83**, 073102 (2012).