Area Seminar

Title	Development of optical parametric oscillator (OPO) for entangled photons
Date and Time	25/05/2012 16:00:00
Speaker	A. Aadhi Physical Research Laboratory, Ahmedabad
Area	Theoretical Physics
Venue	Room No. 469
Abstract	TEntangled photons are of great importance due to their wide applications in many fields including quantum computation and quantum communication. Such entangled photons are commonly generated by spontaneous parametric down conversion (SPDC) of laser radiation in a nonlinear crystal. However, different applications of such photons demand different features. For example, quantum computation may require entangled photons with narrow bandwidth to couple entangled photon with atom while quantum communication may require entangled sources with higher brightness. Unfortunately, single-pass SPDC of continuous-wave or femto-second pump laser do not satisfy the above requirements. Optical parametric oscillators (OPOs), made by coupling SPDC sources inside a high finesse cavity, can generate entangled photons while working below as well as above its threshold. Due to the high finesse of such optical cavities, the generated photons have very low bandwidth and also high brightness, the reason they are called cavity enhanced entangled source. On the other hand, OPOs well above threshold can also be used as alternative coherent source of light for SPDC. In this talk, I will discuss basic principles of the OPO and how it leads to generate Bell's state in polarization basis. I will also discuss about the correlation measurement and quantum tomography technique.