Tata Institute of Fundamental Research
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Internal Seminar

Applications of FWM and XPM induced by ground-state coherence in thermal atomic vapor

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The ground-state coherence developed due to atom-light interaction in a multilevel atomic system is found to enhance different nonlinear optical processes like four-wave mixing (FWM) and cross-phase modulation (XPM). In this talk, I will discuss different applications resulting from these enhanced nonlinear processes such as polarization rotation of light, the mirrorless optical parametric oscillator (MOPO) inside an all-optical waveguide and bistability in the threshold of MOPO in thermal atomic vapor. The experimental observations are explained using the corresponding theoretical model consisting of the light propagation inside a nonlinear medium. This study can be implemented for polarization squeezing, quantum correlation and quantum manipulation of light.

Tuesday, Nov 26th 2019

2:30 PM (Tea/Coffee at 2:00 PM)

Seminar Hall, TIFR-H