

ABSTRACT:

We propose an interesting result of the trapped multi photons distribution within a fiber Bragg grating. The trapped photons are confined by the potential well, which introduce the motion of photons in a fiber Bragg grating affected by multi perturbations. The external perturbations are defined as series of nonlinear parametric in terms of potential energy. This investigation is developed by using the nonlinear couple mode equations and under Bragg resonance condition where the initial frequency of the light, ω_0 is the same value as the Bragg frequency, ω_B . The results show that the higher perturbation series represents the potential well is much indifferent of equilibrium. In applications, the perturbation can cause the trapped photons instability which introduces the escape photons from the potential well. The applications such as entangled photon source and quantum sensors can be performed.