Statistical Properties of a Ring Laser with Injected Signal and Backscattering

LENG Feng and ZHU Shi-Qun

Department of Physics, College of Sciences, Suzhou University, Suzhou 215006, China

Abstract: The statistical properties of a homogeneously broadened ring laser with an injected signal are investigated and the normalized two-mode intensity auto- and cross-correlation functions are calculated by a full saturation laser theory with backscattering. The theoretical predictions are in good agreement with the experimental measurements. Further investigation reveals that the backscattering can reduce the fluctuations in the system while the full saturation effect plays a major role when the laser is operated above threshold. It is also quite important to notice that the injected signal can drive the weak mode from incoherent light to coherent light.

[Full text: PDF]

Close