Optical cavities and quantum emitters

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Propositions

accompanying the thesis

OPTICAL CAVITIES AND QUANTUM EMITTERS

by

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1. Distributed Bragg reflectors require three penetration depths to be described accurately [chapter 2].
2. The ability to measure accurate (polarization-resolved) far-field images of the cavity permits us interesting physics [chapters 3 and 5].
3. One can determine the exact mirror shape from the resonance spectra in a high-finesse cavity [chapters 4 and 5].
4. The light emission from defects in hexagonal Boron Nitride bunches with time scales spanning several orders of magnitude [chapter 7].
5. The precise cavity length can not be determined from the cavity transmission spectra alone [Greuter et al., APL **105**, 121105 (2014)].
6. When the autocorrelation function $g^2(\tau)$ is not properly normalized, it can lead to incorrect claims regarding the properties of single-photon sources [Tran et al. ACS Nano **10**, 7331-7338 (2016)].
7. In order to compare the quality of the setup and single-photon source, one should always specify the measured count rates [Xu et al., Adv. Sci. **9** 2103598 (2022)].
8. The proposed mixing of modes with different orbital angular momentum by Foster et al. is unlikely to occur in real experiments because this Bragg effect is typically much smaller than the non-paraxial effects [Foster et al., PRA **79**, 011803(R) (2009)].
9. Physics never repeats itself, but because of technical improvements, it does often rhyme.
10. The pandemic reminded us of the importance of being bored sometimes.

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