Quantum dot microcavity control of photon statistics

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Stellingen

behorend bij het proefschrift

Quantum dot microcavity control of photon statistics

1. It is possible to accurately estimate the single-photon emission rate of a quantum dot cavity system using only classical theories. *Chapter 2 of this thesis.*

2. Laser light with a low mean photon number ($\langle n \rangle \ll 1$), subjected to a weak non-linearity, can lead to $g^2(0) \gg 1$. *Chapter 4 of this thesis.*

3. $g^2(0) \gg 1$ does not necessarily mean that photons are bunched together. *Chapter 4 of this thesis.*

4. The unconventional photon blockade is an intriguing method to tune photon statistics. *Chapter 5 of this thesis.*

5. The art of making a good single-photon source lies as much in making an appropriate emitter of light as in how the light is extracted. *Chapter 7 of this thesis.*

6. Atom-optics experiments performed by the group of Rempe can be replaced by a 10 μm solid-state device. Reiserer, A. & Rempe, *Reviews of Modern Physics* **87,** 1379 (2015).

7. Although the authors report excellent values for the brightness and purity of a single photon source, the results are not as groundbreaking as the authors suggest. *Somaschi et al., Nature Photonics* **10**, 340 (2016).

8. The observation of Schulte *et al.* that the single-photon stream emitted by a resonant two-level system can be quadrature squeezed goes against common wisdom and is therefore surprising. *Schulte et al., Nature* **525**, 222 (2015).

9. Solid-state single-photon emitters, as discussed by Aharonovich *et al.*, will become the essential element in many future technologies, including quantum communication, and quantum cryptography. *Aharonovich et al., Nature Photonics* **10**, 631 (2016).

10. For decision making, intuition and experience are more important than (scientific) arguments.

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