



Thorsten Pieper
(LOT Quantum Design)

Comparing cameras for Single Photon Detection

Modern imaging in quantum physics and molecular biology more and more rely on highly sensitive cameras. In these fields very small objects like quantum dots, crystal defects, single molecules, atoms or ions are examined as emitters of light. Based on the concept of a 'perfect' detector the differences between common scientific cameras are pointed out. Relevant sources of noise like read noise, dark current and spurious noise of EMCCD, sCMOS and ICCD cameras are discussed and compared with respect to the task of discriminating single photons.

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**Universität Stuttgart, NWZII, Raum 3.123
Pfaffenwaldring 57, 70569 Stuttgart**

