Full Counting Statistics of Photons Emitted by a Double Quantum Dot$^1$ CANRAN XU, MAXIM VAVILOV, University of Wisconsin — We analyze the full counting statistics of photons emitted by a double quantum dot (DQD) to a high-quality microwave resonator due to the dipole coupling. We show that at the frequency matching condition $\omega_0 = \Delta E/h$ for the energy splitting $\Delta E$ of the DQD and the resonator frequency $\omega_0$, photon statistics exhibits both a sub-Poissonian distribution and anti-bunching. In the ideal case, when the system decoherence stems only from photo-detection process, the photon noise is reduced to nearly one-half of the noise for the Poisson distribution. The photon distribution remains sub-Poissonian even at moderate decoherence in the DQD, but eventually become super-Poissonian in the regime of strong decoherence of the DQD.

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