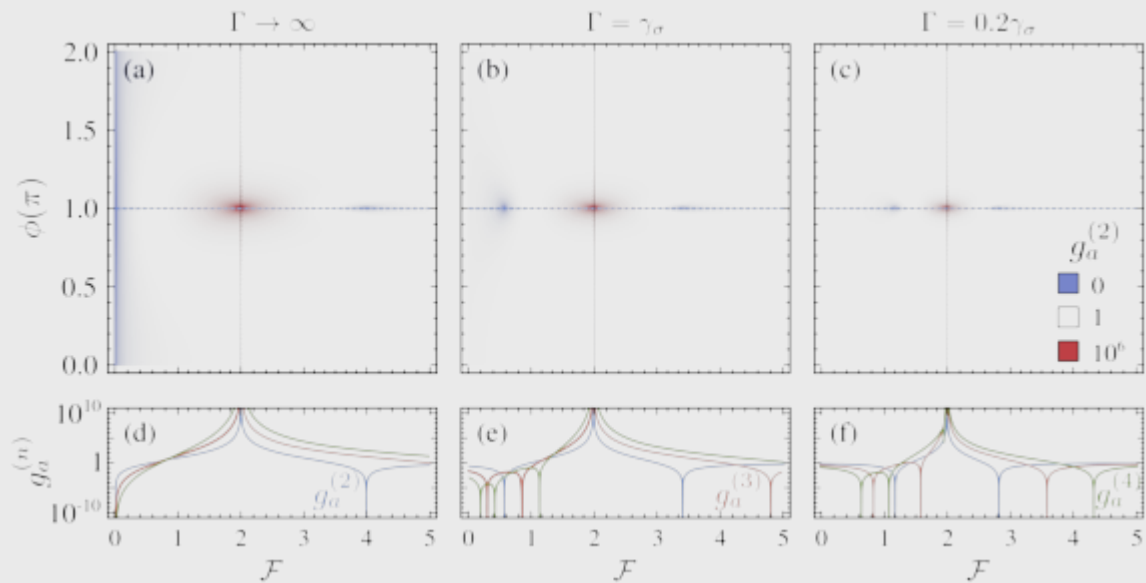


Impact of Detuning and Dephasing on a Laser-corrected Subnatural-linewidth Single-photon Source



Article: published in [Journal of Physics B: Atomic, Molecular and Optical Physics](#) by J. C. López Carreño, E. Zubizarreta Casalengua and E. del Valle, members of the Department of Theoretical Condensed Matter Physics.

We discuss a scheme which makes interfere the emission from a qubit with a laser to produce single photons with subnatural linewidth (monochromatic), although having both properties seems to be in contradiction with the Heisenberg uncertainty principle. In this paper, we consider the effect of dephasing and of the detuning between the driving laser and/or the detector with the emitter. We find that our scheme brings such considerable improvement as compared to the standard schemes as to make it one of the best single-photon sources. While the scheme is particularly fragile to dephasing, its superiority holds even for subnatural-linewidth emission down to a third of the radiative lifetime. [[Full article](#)]