**Room-temperature solid-state single-photon source with high purity and controllable waveforms**

Shih-Wen Feng, Chun-Yuan Cheng, Chen-Yeh Wei, Jen-Hung Yang,

Yen-Ru Chen, Ya-Wen Chuang, Yang-Hsiung Fan, and Chih-Sung Chuu

Department of Physics, National Tsing Hua University, Hsinchu 30013, Taiwan

and Frontier Research Center on Fundamental and Applied Sciences of Matters,

National Tsing Hua University, Hsinchu 30013, Taiwan

**Abstract**

Single photon emitters are indispensable to photonic quantum technologies. Here we demonstrate a room-temperature quantum-dot-based source of single photons with a purity of and controllable waveforms. We show that the high purify of the single photons does not vary with excitation power or between diﬀerent samples. The waveform-controlled single photons also have potential applications in engineering the interaction between single photons and quantum emitters.