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Room-temperature solid-state single-photon source with high purity and controllable waveforms CHUN-YUAN CHENG, SHIH-WEN FENG, CHEN-YEH WEI, JEN-HUNG YANG, YEN-RU CHEN, YA-WEN CHUANG, YANG-HSIUNG FAN¹, CHIH-SUNG CHUU, Natl Tsing Hua Univ — 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 99% and controllable waveforms. We show that the high purity of the single photons does not vary with excitation power or between different samples. The waveform-controlled single photons also have potential applications of optimum quantum state transfer in quantum networks, high-efficiency quantum storage and retrieval of single photons, or quantum key distribution with high key creation efficiency.

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