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

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**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 $g^{\left(2\right)}\left(0\right)=0.01$ 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.