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Technology of light at a few-photon level

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Although the photon has been discovered over a century ago, our capabilities to control quantum light are still strongly limited. Until recently, we could only produce some of its very basic states. However, the past decade has seen tremendous progress in techniques for synthesizing, manipulating, and characterizing a variety of quantum states of the electromagnetic field. In my talk, I will review this progress and report on our group's most recent experiment in which we demonstrated preparation of arbitrary superpositions of zero-, one- and two-photon states.