Tunable-correlation phenomenon of single photons emitted from
a self-assembled quantum dot SHANG YU, JIAN-SHUN TANG, YI-TAO
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mation, University of Science and Technology of China, CAS — Deterministic
single-photon source plays a key role in the quantum information technology. Thus,
research on various properties of such kind of light source becomes a quite neces-
sary task. In this work, we experimentally observe that the second-order correla-
tion properties of single photons can be continuously tuned from pulsed excitation
configuration to continuous-wave excitation configuration under the near resonant
photoluminescence excitation. By increasing the power of pulsed excitation laser,
the effective excitation time of quantum dot can be extended with assistance of
the defect states, and more continuous-wave excitation characteristics will gradu-
ally appear in the second-order correlation functions. This abnormal power-induced
tunable-correlation mechanism can affect the temporal property of the single-photon
source but maintain its antibunching property.