

Abstract Submitted
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Bright spot pattern generation in GaAs/AlGaAs multiple quantum wells¹ ANGELO MASCARENHAS, BRIAN FLUEGEL, National Renewable Energy Laboratory, D.W. SNOKE, Department of Physics and Astronomy, University of Pittsburgh, Pittsburgh, Pennsylvania 15260, USA — Exciton photoluminescence pattern generation is investigated in multiple quantum wells. High-contrast outer rings and localized bright spots are generated using efficient field-assisted upconversion of laser light whose photon energy lies below the energy of the luminescing quantum well transition. Time-resolved images of the bright spot reveal that the ring transients are driven by carrier diffusion both from the laser excitation spot as well as from the bright spot. These dynamics are not explained simply by two-dimensional rate equations for generation and diffusion. The behavior must be understood as a result of three-dimensional transport in the vertically extended samples.

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Angelo Mascarenhas
National Renewable Energy Laboratory

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