

Abstract Submitted
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Exciton transport and exchange self-energy in semi-conducting carbon nanotubes JARED CROCHET, Los Alamos National Laboratory, JAY SAU, Harvard University, MARVIN COHEN, University of California at Berkeley and Lawrence Berkeley National Laboratory, JUAN DUQUE, Los Alamos National Laboratory, LAURENT COGNET, Universite de Bordeaux and CNRS, STEPHEN DOORN, Los Alamos National Laboratory — We present direct measurements of S_1 exciton transport in (6,5) carbon nanotubes. Exciton diffusion lengths associated with end quenching, photoluminescence lifetimes, and homogeneous emission linewidths provide a basis for determining an intrinsic diffusion constant of $5 \text{ cm}^2\text{s}^{-1}$ within the dispersion of light. Exciton diffusion is modeled in terms of an anomalous dispersion within a marginal Fermi liquid description of the exciton exchange self-energy and acoustic phonon scattering.

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