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**Correlations in carbon nanotubes: A DMRG approach** ALEXANDER STRUCK, SEBASTIAN A. REYES, SEBASTIAN EGGERT, Department of Physics, University of Kaiserslautern, D-67663 Kaiserslautern, Germany — Single wall carbon nanotubes (SWCNT) are a paradigm for studying quasi-one-dimensional systems with strong correlations, both experimentally and theoretically. Considering the strong relevance of SWCNT, it is even more surprising that only few numerical calculations of correlation effects have been attempted. In this talk, we use the density-matrix renormalization group (DMRG) technique to treat a recently formulated one-dimensional tight-binding lattice model, which accounts for both the electron motions around the circumference and along the tube axis. We discuss the influence of interactions of variable strength and range on the electronic structure and the electron density and outline possible finite-size and boundary effects.

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