Fine structure of exciton levels in carbon nanotubes: A semianalytical approach\textsuperscript{1} SERGUEI GOUPALOV\textsuperscript{2}, Jackson State University — We propose a new approach [1] toward excitons in carbon nanotubes whereby the matrix elements of the electron-hole Coulomb interaction are expanded into a series over the nanotube’s one-dimensional reciprocal lattice vectors. We show that only a few terms of this expansion give a non-vanishing contribution to the Coulomb matrix elements. The proposed approach allows one to single out Fourier components of the Coulomb potential responsible for the intervalley coupling and formation of the exciton fine structure for each particular nanotube chirality.

\textsuperscript{1} S.V. Goupalov, Phys. Rev. B 84, 125407 (2011).

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also with Ioffe Institute, Russian Academy of Sciences

Serguei Goupalov
Jackson State University

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