1046-35-1118   **Marianna A Shubov*** (`marianna.shubov@euclid.unh.edu`), Department of Mathematics and Statistics, Kingsbury Hall, University of New Hampshire, Durham, NH 03824, and **Miriam Rojas-Arenaza** (`marenaza@cisunix.unh.edu`), Department of Mathematics and Statistics, Kingsbury Hall, University of New Hampshire, Durham, NH 03824. *Mathematical Analysis of Double-Walled Carbon Nanotube Model.*

In our talk, we present a recently developed mathematical model for a short double-walled carbon nanotube. The model is given as a system of two Timoshenko beams coupled through the Van der Waals force. Mathematically, it is a system of two coupled hyperbolic partial differential equations equipped with a four-parameter family of dynamical boundary conditions. We have reduced the system to an evolution equation with a non-selfadjoint matrix differential operator that is a dynamics generator. Asymptotic and spectral properties of this generator will be present in the talk. We show that it is an unbounded nonselfadjoint operator with compact resolvent. We show that the set of complex eigenvalues of the dynamics generator asymptotically splits into the four individual spectral branches, which is consistent with the physics of the model. We discuss the asymptotical distribution of the eigenvalues along each branch. (Received September 14, 2008)