1126-35-17 **Marianna A. Shubov** (marianna.shubov@gmail.com) and **Laszlo P. Kindrat*** (laszlokindrat@gmail.com). *Asymptotic and spectral analysis of bending-torsion vibration model with non-conservative boundary conditions.*

This talk is concerned with mathematical results on the initial boundary-value problem for the coupled bending-torsion vibration model, which is important in different areas of engineering sciences (e.g. design of bridges and tall buildings, aerospace eng., etc.). Mathematically, the model is represented by a system of two hyperbolic PDEs equipped with a 3-parameter family of non-self-adjoint (feedback type) boundary conditions. The system is represented as a first order in time evolution equation in the state space, a Hilbert space of 4-component Cauchy-data. The dynamics generator – a non-self-adjoint matrix differential operator – is the main object of interest. Asymptotic, spectral, and stability results will be presented. In particular, the precise asymptotic formulas for the two-branch discrete spectrum will be discussed. Practical effectiveness of analytical formulas will be demonstrated via numerical simulations. (Received November 04, 2016)