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Marianna Shubov* (marianna.shubov@euclid.unh.edu), Department of Mathematics and Statistics, Hesmith Hall, University of New Hampshire, Durham, NH 03824. *Exact Controllability of Damped Bending–Torsion Beam Model.*

The zero controllability problem for the system of two coupled hyperbolic equations which governs vibrations of coupled Euler-Bernoulli and Timoshenko beam model will be discussed. The system is considered on a finite interval with a two-parameter family of boundary conditions containing damping terms. The controls are introduced as separable forcing terms in the right-hand sides of the equations. To construct the controls, which bring a given initial state to zero on the specific time interval, the spectral decomposition method is applied. The approach is based on the results obtained in recent works by the speaker, where detailed asymptotic and spectral analysis of the nonselfadjoint operator generating the dynamics has been carried out. It has been shown in those works that the set of the generalized eigenvectors of the aforementioned operator forms a Riesz basis in the state space. Based on the spectral results, the control problem is reduced to the moment problem, whose solution will be discussed in the talk. The necessary and/or sufficient conditions for the exact controllability will be presented and explicit formulas for the controls will be given. The case of approximate controllability will be discussed as well. (Received August 13, 2005)