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A CONTROL PROBLEM FOR STRING VIBRATIONS WITH NONSEPARATED CONDITIONS ON THE VELOCITIES OF DEFLECTION POINTS AT INTERMEDIATE TIMES

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We consider the problem of control of string vibrations with given nonseparated values of the derivative of the deflection function at intermediate times. By the method of separation of variables, the problem is reduced to a control problem with countably many ordinary differential equations with given initial, terminal, and nonseparated multipoint intermediate conditions. We solve this problem using the methods of the theory of control of finite-dimensional systems with multipoint intermediate conditions. As an application of the proposed approach, we construct a control action for the problem of control of string vibrations with given nonseparated conditions on the values of the velocities of points of the string at two intermediate times.

Keywords: control of vibrations, string vibrations, intermediate times, nonseparated multipoint conditions.

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