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A LOCKING-FREE OPTIMAL CONTROL PROBLEM WITH L^1 COST FOR OPTIMAL PLACEMENT OF CONTROL DEVICES IN TIMOSHENKO BEAM

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Abstract. The numerical approximation of an optimal control problem with L^1-control of a Timoshenko beam is considered and analyzed. This provides the localization on the best localization of the actuators or control devices. The discretization of the control variables is performed by using piecewise constant functions. The states and the adjoint states are approximated by a locking free scheme of linear finite elements. It is proved that these approximations have optimal convergence order, which do not depend on the thickness of the beam.