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PROPERTY OF GROWTH DETERMINED BY SPECTRUM OF OPERATOR ASSOCIATED WITH THE TIMOSHENKO SYSTEM WITH WEAKLY DISSIPATION

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Abstract. In this work, we consider the Timoshenko system with weakly dissipation, one dissipation, φ_t, on the transverse displacement and another ψ_t, on the rotation angle of a filament of the beam

$$\rho_1\varphi_{tt}-\kappa(\varphi_x+\psi)_x+\varphi_t=0,\ \text{in}\ (0,L)\times(0,t),$$
$$\rho_2\psi_{tt}-b\psi_{xx}+\kappa(\varphi_x+\psi)+\psi_t=0,\ \text{in}\ (0,L)\times(0,t),$$

with initial conditions

$$\varphi(x,0)=\varphi_0(x),\ \varphi_t(x,0)=\varphi_1(x),\ \psi(x,0)=\psi_0(x),\ \psi_t(x,0)=\psi_1(x).$$

In [13] was proved the exponential stability of the semigroup associated with this system, and now we prove the property of growth determined by spectrum of operator associated, present the type of semigroup and also indicate the best constant for the exponential stability.

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