A stability for a nonlinear damped wave equation with variable-exponent nonlinearities

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Abstract

In this work, we consider the following nonlinear wave equation with variable exponents:

$$u_{tt} - \text{div}\left[|\nabla u|^{r(x)-2}\nabla u\right] + |u_t|^{m(x)-2}u_t = 0,$$

in a bounded domain. By using a lemma by Komornik, we prove the decay estimates for the solution under suitable assumptions on the variable exponents m, r and the initial data.