The lifespan of solutions to semilinear damped wave equations in one space dimension

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Abstract In this talk, we consider the initial value problem for semilinear damped wave equations in one space dimension. Ikeda & Wakasugi [1] and Wakasugi [2] have obtained an upper bound of the lifespan for the problem only in the subcritical case. The aim of this talk is to give an estimate of the upper bound of the lifespan in the critical case, and show the optimality of the upper bound. Also, we derive an estimate of the lower bound of the lifespan in the subcritical case which shows the optimality of the upper bound in [1] and [2]. Moreover, we show that the critical exponent changes when the initial data satisfies some symmetric assumption.

Bibliography

[1] Masahiro Ikeda and Yuta Wakasugi , *A note on the lifespan of solutions to the semilinear damped wave equation*, Proc. Amer. Math. Soc. **143** (2015), 163–171.

[2] Yuta Wakasugi, *On the diffusive structure for the damped wave equation with variable coefficients* , Doctoral thesis, Osaka University (2014).