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Milena Stanislavova* (stanis@ku.edu), Snow Hall, University of Kansas, Lawrence, KS 66045, and **Satbir Malhi**. *On the energy decay rates for the 1D damped fractional Klein-Gordon equation.*

We consider the fractional Klein-Gordon equation in one spatial dimension, subject to a damping coefficient, which is non-trivial and periodic, or more generally strictly positive on a periodic set. We show that the energy of the solution decays at the polynomial rate $O(t^{-\frac{s}{4-2s}})$ for $0 < s < 2$ and at some exponential rate when $s \geq 2$. Our approach is based on the asymptotic theory of C_0 semigroups in which one can relate the decay rate of the energy in terms of the resolvent growth of the semigroup generator. The main technical result is a new observability estimate for the fractional Laplacian, which may be of independent interest. (Received September 09, 2018)