Numerical Upper Bounds on Ropelengths of Large Physical Knots

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Abstract

Numerical computations explored for this paper show that an upper bound on the ropelength of large knots with crossing number n grows as fast as $n \ln^2 n$. The algorithms to randomly generate samples of such large knots and to determine an upper bound on the ropelength for each knot are described. The numeric results are presented and compared to the smallest known theoretical upper bounds on ropelength.

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