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Discrete Kutznetsov-Ma breather solutions of the focusing Ablowitz-Ladik equation

In this talk, I will discuss a class of solutions to the focusing Ablowitz–Ladik lattice, which are the discrete analogs of the Kutznetsov–Ma (KM) breathers of the focusing nonlinear Schrödinger equation. In 2015, the inverse scattering transform was used to construct a solution that was shown to be regular. In this talk, I will present a novel KM-type breather solution that is also regular on the lattice. Using Darboux transformation, I will also construct a multi-KM breather solution and demonstrate that the double KM breather remains regular on the lattice.