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Travelling waves in nonlinear magnetic metamaterials

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Magnetic metamaterials composed of split-ring resonators or U-type elements may exhibit dis- creteness effects in THz and optical frequencies due to weak coupling. We consider a model one- dimensional metamaterial formed by a discrete array of nonlinear split-ring resonators with each ring interacting with its nearest neighbours. The existence and uniqueness results of periodic and asymptotic travelling waves of the system are presented. The existence and the stability of periodic and asymptotic waves are also computed and discussed numerically.

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[1] M. Feckan, V.M. Rothos and H. Susanto "Travelling waves in nonlinear magnetic metamaterials" (submitted) 2012.

[2] M. Feckan, M. Pospisil, V.M. Rothos, H. Susanto, "Periodic travelling waves of forced FPU lattices" (submitted), *JOURNAL OF DYNAMICS AND DIFFERENTIAL EQUATIONS* (2012).