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Solitary Waves in Discrete Media and Four-Wave Mixing Products

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In this talk, I will discuss solutions that arise in a vector discrete model of the nonlinear Schrödinger equation where nonlinear inter-component coupling and four-wave mixing are taken into account. We show that the solutions to this model give rise to two single-mode branch solutions as well as two mixed-mode branch solutions. These solutions are obtained explicitly and their stability is analyzed in the so-called anti-continuum limit. Also, we connect this analysis to recent experiments that motivated this work.