

RATIONAL SOLITONS OF RESONANT WAVE INTERACTION MODELS

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Integrable models of resonant interaction of two or more waves in 1+1 dimensions are known to be of applicative interest in several areas. Here we consider a system of three coupled wave equations which includes as special cases the vector nonlinear Schrödinger equations and the equations describing the resonant interaction of three waves. The Darboux construction of soliton solutions is applied with the condition that the solutions have rational, or mixed rational-exponential, dependence on coordinates. Our algebraic construction relies on the use of nilpotent matrices and their Jordan form.