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Coupled discrete solitonic equations and the periodic reduction

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Starting from a general completely integrable 'diagonal' equation in two dimensions and performing periodic reduction one can obtain coupled completely integrable equations. The idea is to consider that the independent discrete variable of the analyzed equation is in fact a diagonal in a two-dimensional (or d-dimensional) lattice. Imposing periodic reduction on the one such coordinate in that 2D-lattice, then we will obtain coupled integrable systems with branched disperssion. We will exemplify the technique on some integrable semidiscrete equations.

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