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**Wen-Xiu Ma\*** ([mawx@cas.usf.edu](mailto:mawx@cas.usf.edu)), Department of Mathematics and Statistics, 4202 E Fowler Avenue, University of South Florida, Tampa, FL 33620. *Nonlinear multi-integrable couplings with Hamiltonian structures.*

Multi-integrable couplings of soliton equations are presented through introducing non-semisimple matrix Lie algebras. The corresponding variational identity yields Hamiltonian structures of the resulting multi-integrable couplings. The key point is the existence of non-degenerate, symmetric and ad-invariant bilinear forms on the adopted Lie algebras. Illustrative examples will be given to shed light on the computational paradigm. (Received September 08, 2011)