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Integrable matrix equations and algebraic structures related to them.

We discuss a special class of linear and quadratic Poisson brackets related to ODE systems with matrix variables. We investigate general properties of such brackets, present examples of compatible pairs of quadratic and linear brackets and find the corresponding hierarchy of integrable models. An interesting class of compatible linear brackets is related to the affine Dynkin diagrams of A, D, E-type. Quadratic brackets are related with the so-called anti-Frobenius algebras.