

Compatible associative algebras, bi-Hamiltonian approach and integrable models

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Abstract: We study linear associative deformations of the matrix multiplication. It turns out that these deformations are in one-to-one correspondence with representations of certain algebraic structures. An important class of such structures is related to affine Dynkin diagrams of  $A$ ,  $D$ ,  $E$ -type. The bi-Hamiltonian approach allows to construct the corresponding integrable ODEs with matrix variables.