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The universal Associative envelope of the anti-Jordan triple system of $n \times n$ matrices

We show that the universal associative enveloping algebra of the simple anti-Jordan triple system of all $n \times n$ matrices $(n \geq 2)$ over an algebraically closed field of characteristic 0 is finite dimensional. We investigate the structure of the universal envelope and focus on the monomial basis, the structure constants, and the center. We explicitly determine the decomposition of the universal envelope into matrix algebras. We classify all finite dimensional irreducible representations of the simple anti-Jordan triple system, and show that the universal envelope is semisimple. We also provide an example to show that the universal enveloping algebras of anti-Jordan triple systems are not necessary to be finite-dimensional.