

Quantum geometry, exceptional quantum geometry and particle physics

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We first review the analysis of Jordan, von Neumann and Wigner showing that the finite-dimensional Euclidean Jordan algebras are the algebras of observables for finite quantum systems, that is the quantum analogs of the algebras of real functions on finite sets.

We then describe in details our approach involving the exceptional Jordan algebra of hermitian 3×3 octonionic matrices for the classification of fundamental particles of matter, the description of their symmetry group and their interactions.