

COMPLEXIFICATION OF THE EXCEPTIONAL JORDAN ALGEBRA AND ITS APPLICATION TO PARTICLE PHYSICS

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Abstract. Recent papers contributed revitalizing the study of the exceptional Jordan algebra $\mathfrak{h}_3(\mathbb{O})$ in its relations with the true Standard Model gauge group G_{SM} . The absence of complex representations of F_4 does not allow $\text{Aut}(\mathfrak{h}_3(\mathbb{O}))$ to be a candidate for any Grand Unified Theories, but the automorphisms of the complexification of this algebra, i.e., $\mathfrak{h}_3^{\mathbb{C}}(\mathbb{O})$, are isomorphic to the compact form of E_6 and similar constructions lead to the gauge group of the minimal left-right symmetric extension of the Standard Model.

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