

Effect of Gravitational Correction in a Supersymmetric E_6 grand Unified Theory

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Received 30.12.22, Accepted 15.1.23

Abstract: We consider a supersymmetric E_6 grand unified theory (GUT) in presence of non-renormalizable dimension-5 operator, which induces gravitational correction. The present model allows intermediate D-parity violating trinification symmetry $SU(3)_C \otimes SU(3)_L \otimes SU(3)_R$ with asymmetric $SU(3)_L$ and $SU(3)_R$ coupling. It is observed that unification mass scale M_U and

⁻¹ inverse GUT coupling constant α_G remain unaffected by the gravitational correction, whereas the electroweak mixing angle $\sin^2\theta_W$ is influenced by it. The nice feature of the present work shows that, inclusion of the gravitational correction, permits low intermediate scale, accessible to experimental detection as well as with admissible unification mass in comply with experimental proton decay constraint.

Keywords: Supersymmetry, E_6 GUT, Trinification symmetry, D-parity, Gravitational correction, Proton decay.

PACS numbers: 12.10.Dm, 12.60.-i, 12.60.JV, 11.30.Pb,