

# Asymptotic Ultraviolet-safe Unification of Gauge and Yukawa Couplings: The exceptional case

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The ultimate dream of unification models consists in combining both gauge and Yukawa couplings into one unified coupling. This is achieved by using a supersymmetric exceptional  $E_6$  gauge symmetry together with asymptotic unification in compact five-dimensional space-time. The ultraviolet fixed point requires exactly three fermion generations: one in the bulk, and the two light ones localised on the  $SO(10)$  boundary in order to cancel gauge anomalies. A second option allows to preserve baryon number and to lower the compactification scale down to the typical scales of the intermediate Pati-Salam gauge theory.

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