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SU(5) aGUT: a minimal asymptotic grand unification model

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We present a new grand unification paradigm, where gauge couplings do not need to be equal at any give scale, instead they run towards the same fixed point in the deep ultraviolet. We provide a concrete example based on SU(5) with a compactified extra space dimension. By construction, fermions are embedded in different SU(5) bulk fields, hence baryon number is conserved and proton decay is forbidden. The lightest Kaluza-Klein tier consists of new states that cannot decay into standard model ones. The lightest massive state can play the role of Dark Matter, produced via baryogenesis, for a Kaluza-Klein mass of about 2.4 TeV. The model also has an interesting and predictive flavour structure.

In-person participation

Yes

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