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Particle Physics at LPTHE

Mardi 6 Mai 2025, 14 :00
LPTHE, library
Domaines : hep-ph

Titre : *Asymptotic Grand Unification in five spacetime dimensions*

Orateur : **Anca Preda (Lund University)**

Résumé : *In the realm of higher-dimensional grand unified theories (GUTs), the technique of orbifolding has emerged as a powerful tool to achieve spontaneous symmetry breaking by geometrical means. We employ this tool to analyse the most general 5D asymptotic GUT (aGUTs) models based on SU(N), Sp(2N), SO(N), as well as exceptional groups. We find a new physical consistency requirement, called orbifold stability, which we use to search for potentially viable aGUT candidates. This criterion points towards a limited number of models, such as SU(6), SU(8) or SO(10), worth investigating further for phenomenological consistency. Additionally, part of this talk will also focus on more theoretical and formal aspects of aGUTs, such as renormalisability and the UV behaviour of five-dimensional gauge theories.*