

# SEMPARIS – Séminaires en région parisienne

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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*

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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.*

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