

## **UV-Completion Beyond Asymptotic Safety: Vainshtein Screening, UV/IR Mixing & Electroweak Naturalness**

*mercredi 5 juin 2024 15:00 (45 minutes)*

If one could probe sub-Planckian length scales by a hard (UV) scattering experiment, one would expect to end up with an extended semi-classical state (black hole) that decays into many soft (IR) quanta by Hawking radiation. This UV/IR mixing in gravity (dubbed classicalization) is a deeply nonlocal phenomenon. It suggests a path towards UV-completion by UV-obstruction, different from the traditional Wilsonian UV-fixed point (asymptotic safety). If the Standard Model is extended by specific self-sourced operators, the electroweak scale could also be stabilized against new large scales via Vainshtein screening that requires a little hierarchy. In this talk, I will discuss that implementing a ghost-free nonlocal Higgs mechanism leads to classicalization of the Higgs field, suggesting that fuzzy interactions trigger classicalization. References: arXiv:1010.1415, arXiv:2307.11741, arXiv:2311.08311

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