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Probing GUT with Accidentally Stable Dark Matter

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In this talk, I will consider extensions of the Standard Model (SM) featuring vectorlike fermions charged under a new confining force, referred to as 'dark color.' These dark fermions condense to form a spectrum of dark hadrons, with the lightest accidentally stable dark baryon, with a mass of around 100 TeV, serving as a viable thermal dark matter candidate. I will, in particular, consider the grand unified theory (GUT) SU(5) framework for these models, highlighting how gauge coupling unification within the SM imposes stringent constraints on their construction. Additionally, I will discuss the unique cosmological scenarios these unified theories present and their phenomenological implications.

Primary authors: Prof. CONTINO, Roberto; BOTTARO, Salvatore; VERMA, Sonali (ULB, Brussels)

Presenter: VERMA, Sonali (ULB, Brussels)

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