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Phenomenology of a stable or long-lived sexaquark [Remote talk]

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A deeply bound di-baryon composed of uuddss quarks, could be stable or sufficiently long-lived to comprise all or part of the Dark Matter. State-of-the-art lattice QCD calculations have been focussed on the existence (or not) of a weakly bound di-Lambda molecule ($\Lambda\Lambda$ -dibaryon), easily missing a deeply bound state. Theoretical mass predictions using QCD sum rules range from 1200 MeV (excluded by the stability of nuclei) to unbound, while other approaches show similarly wide range of predictions. Clearly, experiment is needed to settle the question of the existence of this state, yet discovering it experimentally is surprisingly challenging. This talk will provide an overview of the properties of a deeply bound sexaquark and experimental searches undertaken to date.

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