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Towards Partial Compositeness on the Lattice: Baryons with Fermions in Multiple Representations

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We describe our recent lattice study of $SU(4)$ gauge theory with dynamical Wilson-clover fermions in the fundamental and sextet representations. In this theory, a unique type of baryon consists of quarks in both representations. The spectrum of these “chimera baryons” turns out to have enlightening interpretations in terms of large- N expansion and the non-relativistic quark model. We also discuss the relevance of these results for so-called “partially composite” models of physics beyond the Standard Model.

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