Abstract Submitted
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Study of the spin-flavor structure of excited baryon masses from lattice QCD[1] ISHARA FERNANDO, Hampton University — The known classification of excited baryons based on the dynamical symmetry group $SU(6) \times O(3)$ can be understood in the framework of the $1/N_c$ expansion[1]. The application to masses [2-5] based on the experimentally determined masses can now be extended to the case of baryon masses obtained in lattice QCD[6,7]. The work to be presented analyses the ground state as well as the excited multiplets $[70, 1^-]$,$[56, 0^+]$ and $[56, 2^+]$. Mass relations which are valid up to corrections $1/N_c^2$, or $\frac{1}{N_c}(m_s - m_d)$,or $(m_s - m_d)^2$ are tested and conclusions on quark mass dependence of the effective mass operators and minimal sets of effective mass operators are obtained.

[1] R.F. Dashen, E.E. Jenkins, and A.V. Manohar Phys.Rev.D51,3697(1995).
[2] C.E. Carlson, C.D. Carone, J.L. Goity, R.F. Lebed Phys.Rev.D59,114008 (1999).
[3] J.L. Goity, C.L.Schat Phys.Rev.D66,114014 (1999).
[4] J.L. Goity, C.L.Schat, N.N.Scoccola Phys.Lett.B564,83-89 (2003).
[5] C.E. Carlson, C.D. Carone Phys.Lett.B484,260-266 (2000).
[6] R.G. Edwards, J.J. Dudek, D.G. Richards, S.J. Wallace Phys.Rev.D84,074508 (2011).
[7] R.G. Edwards, N.Mathur, D.G. Richards, S.J. Wallace Phys.Rev.D87,054506(2013).

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