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Singly heavy baryons in a pion mean- field approach

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We present briefly a series of recent works on singly heavy baryons in a pion mean field approach. In the limit of infinitely heavy-quark mass, the singly heavy baryon can be considered as a baryon that consists of $N_c - 1$ light valence quarks. The presence of the $N_c - 1$ valence quarks create the pion mean fields that arise from the vacuum

polarization. Using this approach, we are able to compute various properties of singly heavy baryons such as the mass spectra, magnetic moments, radiative decays, and electromagnetic and transition form factors. The present approach predicts uniquely the existence of the baryon decapentaplet, which may be found experimentally in near future.

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