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# Exotic Baryons in Chiral Soliton Models

*Thursday 5 July 2018 12:00 (30 minutes)*

In this presentation we review the treatment of pentaquark exotic baryons in chiral soliton models. Focus is on two topics. First we study baryons that contain a heavy quark (charm or bottom) or anti-quark. This advances the bound state approach to strangeness and particularly shows that the heavy bound state selects the appropriate representation for the light flavor (up, down, strange) component of the baryon wave-function. This component models the light diquark structure. Basic heavy baryons select the anti-triplet and the sextet. Pentaquarks with a heavy anti-quark relate to the anti-sextet while those with a light anti-quark have light flavors from the anti-decapentaplet. In the second, related, analysis we investigate pentaquark decays in the Skyrme model. By definition of solitons, no term linear in meson fluctuations, that eventually could be identified as Yukawa interaction, should emerge. If it does, it is a mere short-coming of approximating the exact time-dependent soliton solution. Rather, the resonance content of meson baryon scattering must be directly analyzed to obtain the widths of collective resonances. This requires to impose constraints on the collective soliton excitations. In doing so, we show that the decay width may not be estimated from axial current matrix elements. This calculation of the decay width is also shown to be consistent with the limit when the number of colors is large and the constraints are not effective.

**Primary author:** Prof. WEIGEL, Herbert (Stellenbosch University)

**Presenter:** Prof. WEIGEL, Herbert (Stellenbosch University)

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