

## Baryon excited states: quark model versus reality

Hamiltonian effective field theory (HEFT) provides a powerful method by which we can extract physical information about the nature of baryon excited states, using both experimental data and lattice simulations as a function of quark mass. In particular, we have found that both the  $\Lambda(1405)$  [1] and Roper [2] resonances are molecular in nature, with the states expected within the quark model appearing at much higher mass. We will review these two examples as well as more recent applications of the method.

[1] J.J.~Wu et al., Phys. Rev. D 97 (2018) 094509

[2] J.~M.~M.~Hall et al., Phys. Rev. Lett. 114 (2015) 132002

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**Track Classification:** Spectroscopy of hadrons