Excited Nucleon Resonances from the Lattice

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We present a first look at the tower of excited nucleon resonances using two flavors of dynamical Wilson fermions on an anisotropic lattice. By combining covariant displacements with judiciously chosen quark field smearing, we are able to construct operators which strongly overlap the low-lying states of interest. Additionally, we utilize gauge link smearing to improve our signal-to-noise ratio, and use the spatial cubic symmetry of the lattice to facilitate continuum spin identification of our spectral states. Finally, we use a customized variant of the variational method to extract multiple excited states in each spin-parity channel for a selection of pion masses.