Mass Spectra of Pentaquarks – Overlap Fermion versus Wilson Fermion

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Abstract: We investigate the mass spectra of pentaquarks (e.g., Θ^+) in quenched lattice QCD, with the Overlap fermion and the Wilson fermion respectively. Using several different interpolating operators for each pentaquark, we measure their correlation matrix and obtain the eigenvalues $A^{\pm}(t)$ with \pm parity, for 100 gauge configurations generated with Wilson gauge action at $\beta = 6.1$ on the $20^3 \times 40$ lattice. The mass spectra obtained with the Overlap fermion are compared with those extracted with the Wilson fermion.