

HAW05-2005-000168

Abstract for an Invited Paper
for the HAW05 Meeting of
the American Physical Society

Spectroscopy of Pentaquark Baryons

MAKOTO OKA, Tokyo Institute of Technology

I summarize analyses of QCD-based approaches and constituent quark models of pentaquark baryon spectroscopy. QCD sum rules as well as lattice QCD simulations have been applied to the $S = +1$ pentaquark (Θ^+) and its siblings. Their results do not completely agree with each other, but show interesting features which are not necessarily expected from naive constituent quark model pictures. On the other hand, quark models with various interaction models have predicted pentaquark baryons, but the predicted masses are generally much higher than the observed one. I will discuss possible solutions between the discrepancy between QCD and quark models, and most importantly with experiment.