

Abstract Submitted
for the HAW05 Meeting of
The American Physical Society

The two Nucleon States in the Chiral Quark-Diquark Model

KEITARO NAGATA, ATSUSHI HOSAKA, Research Center for Nuclear Physics, Osaka University — We study the ground and first excited states of nucleons in a chiral quark-diquark model. We include two quark-diquark channels of the scalar-isoscalar and axialvector-isovector types for the nucleon states. The diquark correlation violate the spin-flavor $SU(4)$ symmetry, generating a nucleon excited state which does not appear in the ordinary quark model in the $SU(4)$ limit. With a reasonable choice of model parameters, the mass of the excited state appears at around 1.5 GeV, which may be identified with the Roper resonance $N(1440)$.

Keitaro Nagata
Research Center for Nuclear Physics, Osaka University

Date submitted: 23 May 2005

Electronic form version 1.4