

Talk-6

Quark Nuclear Physics at LNS, Sendai

Hajime Shimizu
Tohoku University.

Abstract

Hadrons, complex subatomic particles composed of quarks, are classified into two groups, which are the baryon built from 3 quarks and the meson made of a quark-antiquark pair. The other hadrons are called exotic hadrons. Θ^+ , a pentaquark baryon made up of 5 quarks, would be the first observed exotic hadron in the world. The existence of Θ^+ is getting clear with 15 times more statistics now at SPring-8/LEPS. It is one of the most important issues in quark nuclear physics to elucidate how pentaquark baryons exist. We have recently observed a narrow baryon resonance $N^*(1670)$, a candidate for another pentaquark baryon in the same SU(3) multiplet which Θ^+ belongs to. It showed up clearly in an experiment using a photon beam at the 1.2 GeV electron synchrotron facility, LNS, Tohoku University. The narrow resonance $N^*(1670)$ appears only in the γn reaction, while no resonance-like behavior has been observed so far in the γp reaction. We will pin down the structure of pentaquark baryons through intensive studies of $N^*(1670)$ as well as Θ^+ .