Università degli Studi di Cagliari
Dipartimento di Fisica

Istituto Nazionale di Fisica Nucleare
Sezione di Cagliari
High Energy Theory Group

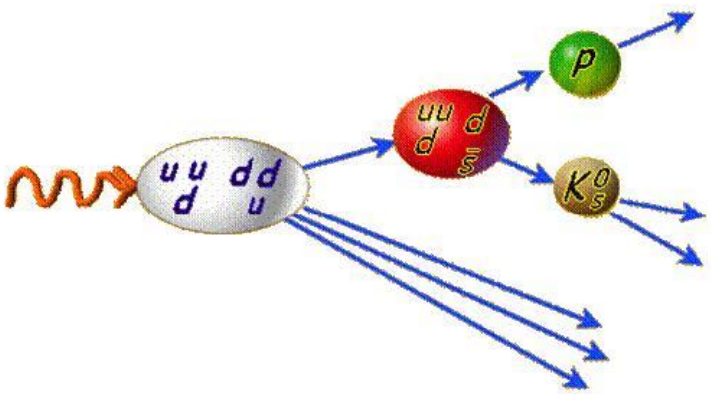
Avviso di Seminario

Giovedì 14 Aprile 2005
h. 16:00 – Aula C

Prof. Nikolai Kochelev
BLTP JINR - Dubna

Exotic multiquark hadrons and structure of QCD vacuum

We analyze the existence of quark-quark correlations in hadrons related to the strong fluctuations of gluon fields in QCD vacuum, called instantons. The specific instanton interaction, gives strong attraction in specific channels of the triquark *u-dbar-s* and diquark *ud* configurations. In particular it leads to a light *u-dbar-s* triquark cluster, with the mass around 750 MeV, in the *I=0, S=1/2* state, and a light *ud*-diquark, with mass 440 MeV, in the *I=0, S=0* state. If we consider the pentaquark as a bound state of such triquark and diquark configurations in a relative *L=1* state we obtain good agreement with the data. The small width of Θ^+ has a natural explanation in this model.



Plot showing the pentaquark production mechanism