SEARCH FOR STRANGE MULTI-QUARK METASTABLE AND STABLE STATES AT JINR, LHE

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Multiquark resonance formation via the compression mechanism reduces to the phase transition of normal density super strange hadronic matter revealing itself as multiquark resonances[1,2]. Stable and metastable strange dibaryons were searched a long time ago at LHE JINR, too. A reliable identification of dibaryons needs a multivertex kinematic analysis which is in turn is feasible only using 4π-detectors and high precision measurements of the sought objects. The investigations of multiquark states have been carried out in two directions:

1. The effective mass spectra of 17 strange multiquark systems were studied for neutron exposure $n\ ^{12}C \rightarrow \Lambda X$ at average momentum $< p_n >$=7.0 GeV/c, and our group succeeded in finding resonance-like peaks[3-5](Table.1) only in five of them Λp (Fig.1),$\Lambda p\pi$ (Fig.2), $\Lambda\Lambda$, $\Lambda\Lambda p$, $\Lambda\pi^+\pi^+$(Fig.3). Most significant evidence is included in the Review of Particle Properties. Up to now, the same group is going on to collect statistics(more 3 time)for strange V^0 particles on the photographs of the JINR 2m propane bubble chamber exposed to a 10GeV/c proton beam because it is the necessary to improve a statistical significance of the identified resonance peaks and to search for new strange multiquark resonance states.

2. The search for weak decay channels for stable S=-2,3 dibaryon states is being continued to date.A few events, detected on the photographs of the propane bubble chamber exposed to a 10 GeV/c proton beam, were interpreted as H dibaryons[6-10]. There are two groups of events interpreted as S=-2 stable dibaryons(Table 2): a) The first group is formed of three neutral, S=-2 stable dibaryons, the masses of which are below $\Lambda\Lambda$ threshold(Figs.4,5); b) The second group is formed of neutral and positively charged S=-2 heavy stable dibaryons(Figs.6,7).

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