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Resolution of SPD Detector in the Search of Dibarions with small energy excitations

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There are some indications on the existence of two barion states, that are systems with barion number 2(dibarion) and excitation energy lower than π0 mass. Such state according to barion number conservation after its production decays into proton and neutron and has a mass MX = Md + Eexc,where Md and Eexc are deuteron mass and excitation energy.

The simulations of dd collisions is performed in assumption that in final state we have deuteron and dibarion with mass MX. Eexc is taken here as a fraction 1/4,1/2,3/4 of π0 mass equal to 0.135GeV , what corresponds to MX equal to 1.90935,1.9431,1.97685 in GeV respectively.

Momenta of colliding deuterons were taken equal to 2.6 GeV/c what corresponds to the condi- tions of Baldin et al. experiment (Baldin A.M. et al.,Communication of the JINR, Dubna 1979,1- 12397). This study is performed under the conditions that the collider momentum is fixed at the 2.6 GeV/c;the transferred momentum of unbroken deuteron t = -0.5 (GeV/c)2,all the collisions take place at the center of the detector, and the dibarion has zero decay width.

The analysis shows that the resolution of dibarion mass under these conditions is ≈ 2 – 3 MeV and opening the way to propose the study of this process at the commissioning stage of SPD detector.

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