

# INTERPRETATION OF THE INCOMPLETE FUSION OF NUCLEUS AS A QUASIFISSION OF DINUCLEAR SYSTEM

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The strong dependence of the correlation between energy and angular distributions of the observed alpha-particles in heavy ion collisions on the beam energy shows the importance of the impact parameter in the incomplete fusion [1,2]. The complete fusion of the interacting nuclei is transfer of all nucleons in light projectile to the target nucleus. This process may be hindered by the intrinsic fusion barrier  $B_{fus}$  [3], which increases sharply for small mass numbers  $A$  in collisions with large impact parameter: the fusion probability strongly decreases when the excitation energy  $E_{DNS}$  of the dinuclear system (DNS) is smaller than  $B_{fus}$ . As a result, the DNS may emit the alpha-particle or heavier clusters during rotation around the axis at its the center-of-mass of DNS which is perpendicular to the  $R$  vector connecting fragments centres. This process is observed as the yield of the clusters in the incomplete fusion. The probability of the cluster formation emission is calculated by solution of the transport master equation [3] and the probability of its emission is calculated as a tunneling through the quasifission barrier  $B_{qf}$  [3], which is determined by the height of the potential well of the interaction between DNS fragments. The partial cross section of the incomplete fusion accompanying by the alpha-particle emission shows that its maximum has the shape of the Gaussian function with the maximum at the values of the orbital angular momentum  $L=35-50 \hbar$  as a function of the beam energy  $E_{lab}$ .

## The speaker is a student or young scientist

No

## Section

1. Experimental and theoretical studies of nuclear reactions

**Primary authors:** NASIROV, Avazbek; Dr KAYUMOV, Bakhodir (Institute of Nuclear Physics, Tashkent); Dr GANIEV, Orifjon (Institute of Nuclear Physics, Tashkent); Dr YULDASHEVA, Guzal (Institute of Nuclear Physics)

**Presenter:** NASIROV, Avazbek

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