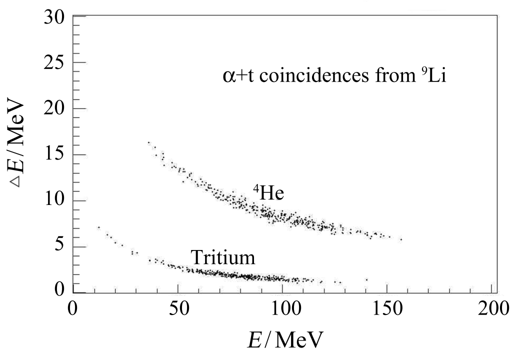

Fig. 2 The ΔE-E spectrum of the coincidence of charged t and α in breakup reaction from ^{9}Li.

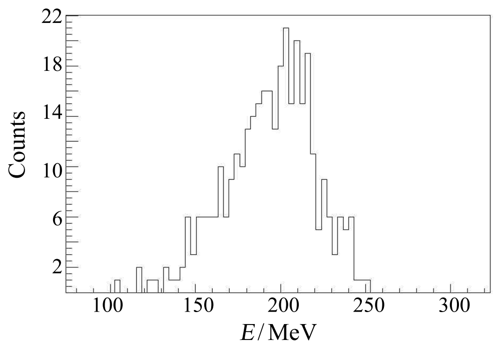

Fig. 3 Energy sum spectra of the coincidence of charged t and α in breakup reaction from ^{9}Li.

In summary, the experimental study of the cluster structure of ^{9}Li though analyzing its breakup fragments was performed at RIBLL. We mainly took into account the α+t+n+n structure of the ^{9}Li and identified the coincident charged particles α and t through analyzing the ΔE-E telescope array. The existence of the α+t+n+n structure of ^{9}Li possibly be determined by these coincident charged particles from the breakup reaction of ^{9}Li on Pb target. The further studies of this experimental data will be analyzed and investigated in detail.

References

[1] J. P. Ebran, et al., Nature, 487(2012)341.
[2] T. Tomoda, A. Arima. Nucl. Phys. A, 303(1978)217.
[3] P. Taras, et al., Phys. Lett. B, 107(1981)1.
[4] T.Yamaya, et al., Phys. Rev. C, 42(1990)5.
[5] L. Giot, et al., Phys. Rev. C, 71(2005)064311.
[6] R. Palit, et al., Phys. Rev. C, 68(2003)034318.
[7] P. Ma, et al., Atomic Energy Science and Technology, 45(2011)356.
[8] S. L. Jin, et al., Nucl. Instrum. Methods. Phys. Res. Sect. B, 317(2013)728.
[9] X. W.Yao et al., Atomic Energy Science and Technology, 44(2011)358.

2- 25 Interpretation on the Mass Dependent Behavior of Transverse Flow Using Collective-thermal Competition (Percolation) Model

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According to the interplay model proposed in Ref. [1], an improved model, Collective-thermal Competition (Percolation) Model (CTCPM) is developed. The improvements are made by adding the momentum conservation into the interplay of the thermal motion and the collective motion and limiting the emitting system to be finite. For a nuclear system at a thermal equilibrium, the momentum of the thermal motion distributes isotropically in x, y, z directions (z is the beam direction) and make no effect on the flow (P_x) in average.

However, this thermal motion also superimposes onto the longitudinal momentum, resulting in the deformation of the rapidity distribution. While fragments in the mid-rapidity region are selected to extracted flow, in "P_x /A-Rapidity" 2D plot the original average P_x /A in given rapidity bins shifts with the rapidity and the calculated flow is disturbed depending on the fragment mass by the mass dependent thermal momentum. In this model, a purely geometrical model, percolation model is introduced to realize the generation of the fragments from the finite sources (4*4*5) with a certain mass $A_{\rm sys} = 80$[2]. Since the selection of $p_{\rm c}$ does not affect the results significantly, $p_{\rm c}$ =0.40 is adopted to fit the light particle multiplicities from the transport model (CoMD) in our present calclations. The momentum per nucleon of these fragments, P_i/A ($i = x,\ y,\ z$), is decomposed into the thermal component $P^{\rm therm}_{x,y,z}$/A and the collective component $P^{\rm coll}_{x,y,z}/A$ for a given mass number A . Thereinto, the thermal components are expressed by a Maxwell velocity distribution; for the collective component, only the in-plane transverse flow is taken into account, so that a Gaussian distribution, which is with width λ, is adopted to describe the distribution