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Isoscaling effect with Z=1 and 2 particles in Sn+Sn at 270 AMeV

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Isoscaling effect with Z=1 and 2 particles in Sn+Sn at 270 AMeV

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The mechanism of the fragmentation in heavy ion collision is studied with particle yields of light nuclei. In the thermal equilibrium view, the primary fragment yield can be predicted using the partition function of each fragment. However, the fragments go through the secondary decays before they are detected. The effects of the secondary decay are largely canceled in the ratios of particle yields between the two systems with similar size and temperature. These ratios of the particle yields show the exponential relation in neutron and proton number, which is known as isoscaling. We explore this phenomenon in the neutron rich ^{132}Sn+^{124}Sn and neutron deficient ^{108}Sn+^{112}Sn systems. The radioactive Sn isotopes at 270 AMeV were produced from the Radioactive Isotope Beam Factory (RIBF) at RIKEN, and the particles were measured with the SπRIT Time Projection Chamber. At this energy, the light particles with $Z \leq 3$ and the pions are well identified. In this presentation, Z =1 and 2 particles are used to explore the isoscaling properties, and the experimental data are compared to the Statistical Multifragmentation Model (SMM) and Antisymmetrized Molecular Dynamics (AMD) calculations.

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