

The development of AT-TPC for nuclear astrophysics experiments at IMP

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New and next generation RIB facilities provide new insight into the nuclear structure and reaction dynamics of exotic nuclei. However, many of the most interesting species are always produced with very low intensities. Active target Time Projection Chamber (AT-TPC) is one powerful device with several significant features, including 4π acceptance of the reaction products, full detection efficiency and high sensitivity, and an event-by-event reconstruction in three dimensions. This enables the use of TPC to break through beam limitation and study nuclei very far away from stability. One novel TPC is being developed in a collaboration at IMP. Our primary goal is to study astrophysically important fusion reactions and key (α ,p) reactions in the X-ray bursts.

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