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Velocity determination of hydrogen clusters at a cluster-jet target

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The prototype of the cluster-jet target station for PANDA has been built up at the University of Münster. This setup allows for systematic studies on the production of high density cluster-jet beams and their properties. One important parameter determining the performance of internal targets for storage ring experiments is the target thickness. In case of the cluster-jet targets the target thickness is closely related to the mean velocity of the clusters. In this contribution we will present a technique developed for the determination of the velocity distribution of the clusters. Results obtained with this method will be shown and compared to calculations based on different gas dynamic models for the gas flow through the nozzle of the cluster source. Furthermore we will present first results of an extension of this technique which allows for the determination of the mass distribution of the clusters.

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