Abstract Submitted
for the DNP08 Meeting of
The American Physical Society

Position determination of fragile objects in nuclear physics experiments[1] HOI KIT CHEUNG, The Chinese University of Hong Kong; UC Berkeley, M. BETTY TSANG, NSCL, MSU, Michigan — To study the single particle nature of unstable nuclei, inverse kinematics with radioactive beams in transfer reactions have to be used. In such experiments, it is important to determine the exact positions of the beam and detected particles. A Laser Based Alignment System (LBAS) has been successfully used in several nuclear physics experiments. LBAS is designed to determine positions of sharp edges with sub-millimeter accuracy without physical contact with the measured object. In the recent p(^{34,46}Ar,d) transfer experiments, the beam positions at the target are reconstructed with Channel Plate Detectors, the emitted deuteron particles are detected with the High Resolution Array (HiRA) and the recoil particles are measured with the S800 spectrometer. The HiRA device consists of multiple telescopes, each of which consists of 1024 pixels, with the dimension of 1.95x1.95mm^2 for each pixel. We use LBAS to determine the positions of the target, the channel plate detectors, and the pixels positions of HiRA. We then map these elements to the global positions of the S800 spectrometer and its magnetic elements.

[1]This work is supported by the National Science Foundation under Grant Nos. PHY-0606007 and SURE.

Hoi Kit Cheung
The Chinese University of Hong Kong; UC Berkeley

Date submitted: 01 Aug 2008 Electronic form version 1.4