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Simultaneous electron capture to bound an continuum states in 90 AMeV U^{88+}+N_2 collisions SIEGBERT HAGMANN, Inst. f. Kernphysik Univ. Frankfurt, MUAFFAQ NOFAL, MPI-K Heidelberg, THOMAS STOEHLKER, CHRISTOPHOR KOZHUHAROV, GSI-Darmstadt, XINCHENG WANG, Fudan Univ. Shanghai, ALEXANDER GUMBERIDZE, U. SPILLMANN, REGINA REUSCHL, SEBASTIAN HESS, FRITZ BOSCH, DIETER LIESEN, GSI-Darmstadt, DORIS JAKUBASSA, RZ-LMU Muenchen, JOACHIM ULLRICH, ROBERT MOSHAMMER, MPI-K Heidelberg, REINHARD DOERNER, IKF Univ. Frankfurt — Electron transfer processes at relativistic collision velocities are an essential ingredient in relativistic accelerator design. The large recombination energy of highly charged ions contributes to extended multiple ionization of target atoms, and thus population of multiply excited configurations in the projectile. Theories have widely failed to describe the intrinsic many-electron processes in the capture channel. Using the imaging forward electron spectrometer in the ESR we have searched for many body processes in the capture channel and measured for 90AMeV $U^{88+} + N_2 \rightarrow U^{87+} + N^{+*} + e_{cusp}$coincidences between the cusp electron and the projectile having captured one electron into a bound state. We find that the cusp in the coincident 0^0–electron spectrum shows still a clear asymmetric shape skewed to the low energy side as predicted for a single active electron ECC. Further experiments are in progress.

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