

HIGH RESOLUTION AUGER PROJECTILE ELECTRON SPECTROSCOPY OF LI-LIKE IONS PRODUCED BY ELECTRON CAPTURE OF HE-LIKE IONS IN COLLISIONS WITH GASEOUS TARGETS

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We have recently build a new experimental station with a beam line dedicated to atomic collisions physics research at the 5 MV TANDEM Demokritos accelerator in Athens, Greece. A complete zero-degree Auger projectile spectroscopy apparatus composed of a single stage hemispherical spectrometer and 2-dimensional position sensitive detector combined with a doubly-differentially pumped gas target has been put together for high resolution studies of electrons emitted in ion-atom collisions.

Using the new setup we shall perform a systematic isoelectronic investigation of K-Auger spectra emitted from pre-excited ions in collisions with gas targets using novel techniques. Our results are expected to lead to a deeper understanding of the neglected importance of cascade feeding of metastable states in collisions of ions with gas targets and further elucidate their role in the non-statistical production of excited three-electron states by electron capture, recently a field of conflicting interpretations awaiting further resolution [1-3].

[1] Zouros T J M, Sulik B, Gulyás L and Tökési K 2008, *Phys. Rev. A* **77** 050701R

[2] Strohschein D, Röhrbein D, Kirchner T, Fritzsche S, Baran J and Tanis J A 2008, *Phys. Rev. A* **77** 022706

[3] Rohrbein D, Kirchner T and Fritzsche S 2010, *Phys. Rev. A* **81** 042701

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ABSTRACT

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