

ATOMIC PHYSICS WITH ACCELATORS: PROJECTILE ELECTRON SPECTROSCOPY (APAPES)*

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The new research initiative APAPES [1] funded by THALES* is currently setting up a new experimental station at the 5.5MV TANDEM of the National Research Center “Demokritos” in Athens with a dedicated beam line for atomic collisions physics research.

A completely new apparatus, concerning zero-degree Auger projectile spectroscopy, is being put together to perform high resolution studies of electrons emitted in ion-atom collisions. This consists of a hemispherical deflector analyser (HDA) with a 2-dimensional position sensitive detector (PSD) combined with a doubly-differentially pumped gas target. It will be used to perform a systematic isoelectronic investigation of K-Auger spectra emitted from collisions of pre-excited and ground state He-like ions with gas targets using novel techniques.

Our goal is to provide a better understanding of cascade feeding of the $1s2s2p\ ^4P$ metastable states in collisions of He-like ions with gas targets. Also, to further elucidate, the roles of these states, produced by electron capture in the non-statistical population of excited three-electron $1s2s2p$ states [2].

First beam tests of the apparatus will be soon completed and the spectrometer is expected to become fully operational by the end of this summer. Here, we report on the progress of the APAPES project, the description of its beam line, the spectrometer and data acquisition system as well as our plans for the near future.

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References

[1] <http://apapes.physics.uoc.gr>

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