Nuclear Transitions Induced by Electronic Capture in Highly Ionized Atoms

S. Mishev[1], **T. Apostolova**[2]

[1]Joint Institute for Nuclear Research, Dubna, Russia
[2]Institute for Nuclear Research and Nuclear Energy, Sofia, Bulgaria

Nuclear excitations triggered by the exchange of a virtual photon between a captured electron in a bound atomic state and the nucleus [1] are considered. The calculation of the rate of such excitations depends on the correct description of the dynamics of the nuclear, atomic and in our case plasma systems involved in the process. Applying a set of criteria a selection of states in nuclei from different parts of the nuclear chart are discussed as candidates for high reaction rates for this excitation mechanism. An overview for describing these states is given along the lines of the collective and a microscopic model. Practical and astrophysical aspects of this process are outlined.

References

[1] V. Goldanskii and V. A. Namiot, *Phys. Lett.* **62B** (1976) 393.