Dielectronic recombination of MNN in highly charged Tungsten with open f -shells

Pedro Amaro[1], **Chintan Shah**[2], **and Sven Bernitt**[2], **José Paulo Santos**[1], **José R. Crespo López-Urrutia**[2]

[1] *Laboratório de Instrumentação, Engenharia Biomédica e Física da Radiação (LIBPhys-UNL), Departamento de Física, Faculdade de Ciências e Tecnologia, FCT, Universidade Nova de Lisboa, 2829-516 Caparica, Portugal*
[2] *Max-Planck-Institut fülr Kernphysik, D-69117 Heidelberg, Germany*

By using an electron beam ion trap (EBIT), we performed measurements of dielectronic recombination (DR) following MNN mechanisms in highly charged tungsten in the energy region of multi-electronic compound resonances with many f-holes. The present measurements were carried out on the FLASH electron beam ion trap at the Max-Planck-Institute for Nuclear Physics in Heidelberg. In order to probe MNN dielectronic resonances with energies bellow the ionization threshold of ions with open-f shells, as well as maintaining ion abundances constant, the free electron energy was scanned over the resonances with times of tens of milliseconds. Preliminary calculations based on Flexible Atomic Code (FAC) are reported in order to determine the main MNN resonance channels, ion abundances as well as recombination processes via multi-electron excitations. The present results are of interest to the reactor fusion community and to the new initiative The Tungsten Project [1], which reports total and partial final-state DR and radiative recombination rate coefficients obtained with the Autostructure code with the goal of covering all charge states consistently.

[1] S. P. Preval et al. Phys. Rev. A 93 042307 (2016)