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A preparation Penning trap for the project TRAPSENSOR with prospects for MATS at FAIR

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Most of the Penning traps for precision measurements (MT) at Radioactive Ion Beam (RIB) facilities make use of another Penning trap located upstream in the experimental set up, to perform isobaric separation (PT) and deliver cooled samples of the ions to be measured in the MT. The PT for the project TRAPSENSOR at the University of Granada has been built to prepare ions produced off-line, with a laser-desorption ion source, using firstly the buffer-gas cooling technique [1]. It will be also used as a platform to investigate the induced image-current technique in a specific frequency range. The system has been built following the geometrical specifications given in the Technical Design Report for the MATS facility at FAIR [2], so as to allow performing later other cooling mechanisms on the ions ensemble (singly or multiply charged) and reaching lower final temperatures. So far, cooling resonances have been obtained for several isotopes, with mass-to-charge rations ranging from 40 to about 200, with specifications similar to those PTs already in operation at RIBs. In this contribution the PT will be described, with the associated infrastructure, i.e., the cold head system to run it at low temperature (about 40 K), and the electronic detection circuit. The measurements obtained so far will be also presented.

[1] J.M. Cornejo, P. Escobedo and D. Rodríguez, Hyperfine Interact. 227 (2014) 223.
[2] D. Rodríguez et al, Eur. Phys. J. ST 183 (2010) 1.

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