

New Developments for the RFQ-Accelerator of the Heidelberg High Current Injector, S. AUCH, M. GRIESER, D. HABS¹, R. VON HAHN, C.-M. KLEFFNER, M. MADERT, S. PAPUREANU, R. REPNOW, A. SCHEMPP² and D. SCHWALM, Max-Planck-Institut für Kernphysik, Heidelberg - At the Max-Planck-Institut für Kernphysik in Heidelberg a high current injector is under construction. It will consist in its first phase of a high current ion source for singly charged ions, two RFQ- and eight 7-gap-resonators. In this phase preferably Li- and Be-beams will be accelerated to an energy of 1.8 MeV/u with intensities up to 3 orders of magnitude higher than with the present tandem-accelerator. All resonators will operate at a frequency of 108.48 MHz with a high duty cycle of 25% at a maximum power consumption of 80 kW per cavity. With the first RFQ-resonator high power tests and acceleration experiments have been carried out. A new numerical method to optimize a RFQ-design - based on random modifications of the design parameters - was developed and used for improvements of the RFQ-accelerator structure.

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