A Two-Beam RFQ and a novel Design for Ion Beam Funneling[*], A. FIRJAHN-ANDERSCH, J. MADLUNG, A. SCHEMPP, Institut Für Angewandte Physik, Johann Wolfgang Goethe Universität, Frankfurt Am Main, Germany - In a heavy ion inertial fusion (HIIF) driver the strongest current limitations are space charge forces at the low energy part of the linac. For this reason the required high current and small emittance ion beam will be reached by several funnelling stages, where two identically bunched ion beams are combined into a single beam with twice the frequency, current and brightness. For the first funnelling stage a new two-beam RFQ, where two beams are bunched and accelerated in a single rf-cavity and a novel scheme for an rf funnelling deflector operating at low voltages has been developed. With the use of convergent incoming beams, a short structure placed around the beam crossing position seems to be possible. The design of the multi-gap deflector geometry and the results of particle simulations together with rf structures development will be discussed. The experimental set-up for a combination of a two-beam RFQ with such a deflector for funnelling of two He^+-beams at low energies will be presented.

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