

Transverse RF Focussing in Jefferson Lab Superconducting Cavities*, G.A. KRAFFT, P. PIOT, TJNAF - We have investigated the rf transverse focussing effect in a five-cell CEBAF-type superconducting accelerating cavity on a space-charge-dominated electron beam produced by the photoemission gun of the Jefferson Lab free-electron laser. The measurements, which consist in determining the phase-space map for different cavity phases, were performed measuring the emittance and Twiss parameters downstream of the cavity by means of a multislit device. The experimental results, for different charges per bunch are compared with two analytical models and with numerical simulations using an in-house version of the PARMELA "particle-pushing" code which incorporates a MAFIA model of the field map in the CEBAF-cavities.

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