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Title: Amplitude and phase stability studies in a DC superconducting injector

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Abstract: The DC superconducting injector will be used in the PKU-THz facility which consists of a DC-gun and a 3+1/2-cell superconducting cavity. The cavity must accelerate the electron beam to 5.82 MeV which is susceptible to perturbations because of its narrow bandwidth. In this paper, the sources and influences of the perturbations in the 3+1/2-cell cavity are discussed. It is shown that the control system is essential for the cavity. The design of a feedback based digital RF low level control system for the 3+1/2-cell cavity is accomplished.