

Construction of a 161 MHz, $\beta=0.16$ Superconducting Quarter Wave Resonator with Steering Correction for RIA

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Abstract

We have built a 161 MHz, $\beta=0.16$ superconducting Quarter Wave Resonator with steering correction for the low beta section of RIA. This bulk niobium, double wall cavity, compatible with both separate vacuum between beam line and cryostats or unified one, was designed in collaboration between MSU-NSCL and LNL. The design is suitable for extension to other frequencies, e.g. to obtain the 80 MHz, $\beta=0.085$ cavity required in RIA. The shaped drift tube allows correction of the residual QWR steering that can cause emittance growth especially in light ions; this could make this resonator a good alternative to Half-Wave resonators in high intensity proton-deuteron linacs, like the SPES injector project at LNL. First test results will be presented.

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