

Prototype NOvA RF Cavity for the Fermilab Recycler

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As part of the NOvA project the Fermilab Recycler Ring will be converted to a pre-injector to the Main Injector. This upgrade allows the cycle time to be reduced from 2 seconds to 1.33 seconds; thus yielding an increase in beam power, which can be accredited to two slip stacking cavities in the Recycler Ring. Therefore in this study we built an inexpensive, low power prototype of this NOvA RF cavity. The prototype RF cavity, proved to be useful in identifying various higher order modes, as well as in measuring key parameters associated with the main mode such as Q , dependence of frequency on gap spacing, and sensitivity to tuner depth and z position.

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