

Development, Processing, and Installation of RFQ Input Power Coupling System*

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A new RF coupling system for the RFQ structure in the SNS linac front-end has been developed for upgrade of input power coupling to the RFQ. The coupling system employs two coaxial loop couplers for 402.5 MHz operation; the two couplers are used in parallel to power the accelerating structure with up to 800 kW total peak power at up to 7% duty cycle. Each coupler has a coupling loop through a coaxial ceramic window that is connected through a coaxial to waveguide transition to each output of a magic-T waveguide hybrid splitter. The coaxial loop couplers have been designed, manufactured, and high power processed. The cavity structure is retuned for the installation of new coupling system. This paper presents the followings: RF and mechanical designs of the couplers and the coupling system, procedure and result of high power RF conditioning, and installation, test, and operation results of the upgrade.

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