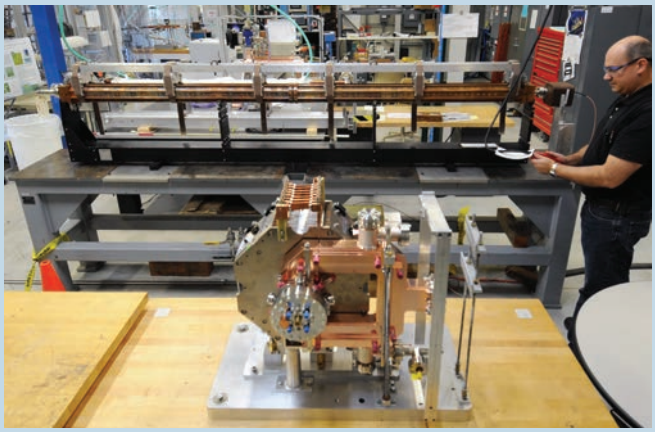
Radio-Frequency Network Analysis Test Stands

The radio-frequency (rf) network analysis (RNA) test stands are fully equipped with several network analyzers including two precision network analyzers (PNAs) and two dedicated rf network analysis test areas with bead-pull and LabView capabilities that are currently in use. The RNA test areas are **Building 401, Lab 3129**, and **Building 400A-3** at the Advanced Photon Source.

Building 401, Lab 3129:
The Lab 3129 test area uses a precision network analyzer (10 MHz to 20 GHz) with precision translation stages to allow bead-pull measurements to be made repeatable on or off axis, and uses a stepper motor controlled by a separate computer with LabView. The LabView program is modified for each individual rf experiment as required. This system also provides a unique capability that uses two 81110A pulse/pattern generators and a 25623A H81 pulse test set, which allows for S-parameter measurements to be made inside the pulse.

Building 401, Lab 3129 RNA test stand

Building 400A-3:
The 400A-3 rf test area is equipped with a PNA with a frequency range of 10 MHz-20 GHz and several bead-pull setups. Rf test area #1 (RFTA#1) has a closed-loop water distribution for precision water temperature control. RFTA#1 is currently utilized for rf measurement and testing of an S-band copper deflecting structure and other S-band accelerating structures. Rf test area A#2 is also equipped with a closed water loop and is currently used to measure rf performance of a new Linac Coherent Light Source-type photocathode rf gun. Both rf test areas can accommodate testing of various types of rf structures.



Building 400A-3 RNA test stand