



Contribution ID: 186

Type: **Invited Oral**

Development and Status of the FRIB 28 GHz SC ECRIS

Monday, September 20, 2021 7:15 AM (30 minutes)

To meet a beam power requirement of 400 kW for heavy ions, a high intensity 28 GHz superconducting ECR ion source is under development at the Facility for Rare Isotope Beams (FRIB) in collaboration with Lawrence Berkeley National Laboratory (LBNL). The magnet was built and tested at LBNL and integrated into the ion source cryostat on the FRIB high voltage platform. Magnet cooldown to 4.2K was completed successfully in December of 2020. The static heat load at 4.2K has been measured to be around 1.2 W, in good agreement with the design value. The heat load is managed through 2 GM-JT cryocoolers that have been in operation for several months. Magnet energization and field mapping are scheduled in July of 2021. Warm components preparation and assembly test are ongoing in parallel. 18 GHz Klystron amplifier has been tested with a dummy load. The ion source commissioning with 18 GHz Klystron shall start in October of 2021. Details of the ion source development, status, and commissioning plan will be presented in the paper.

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Track Classification: Production of highly charged ion beams