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The Advanced Cryogenic Gas Stopper at NSCL – Progress towards Operations

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The Advanced Cryogenic Gas Stopper (ACGS) has successfully delivered its first rare isotope beam for experiments at the National Superconducting Cyclotron Laboratory (NSCL). The ACGS has shown an increase extraction efficiency, reduce transport time, reduce molecular contamination of the isotope of interest, and the ability to minimize space charge effects. This is achieved by a novel 4-phase Radio Frequency wire-carpet which generates a traveling electrical wave for fast and efficient ion transport, cryogenic cooling of the helium gas chamber reduces unwanted molecular formation, and the new planar geometry with the wire-carpet in the mid-plane of stopper alleviates space charge effects. Offline testing of ACGS has shown wire-carpet transport efficiencies greater than 95% and transport speeds up to 100 m/s. Operating at a temperature of near 80 K, ACGS delivered argon-44 to the ReA3 system reliably for over a week with a beam rate up to twice as much as advertised on the ReA3 Beam List. This presentation will show the most recent online and offline performance of the ACGS and discuss advancements made regarding extraction from the gas stopper.

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