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C3Or1B-06: FRIB Helium Compression System Commissioning and Performance Test Results

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The design for the FRIB helium compressor system, used for the cryogenic refrigeration, was mainly based on the advancements developed for NASA James Webb project, improving the efficiency, reliability and maintainability from previous helium compression systems. The skid designs were further improved, first for the JLab 12 GeV project, and now with additional improvements for the FRIB project. The FRIB helium compression system has five operating compressors at maximum refrigeration capacity with an additional spare compressor. This spare can be configured to align its suction to any one of the three pressure levels of the five, discharging to the high pressure (4.5 K cold box supply) stream. This compressor system can support the 4.5 K cold box operation with a supply pressure varying from 6 to 21 bar, and without complex-sophisticated control of the gas management valves. This paper will briefly review several of the skid improvements and discuss some of the recent commissioning and test results.

Primary authors: Dr KNUDSEN, Peter (Facility for Rare Isotope Beams - Michigan State University); Dr GANNI, Venkatarao (Facility for Rare Isotope Beams - Michigan State University); Mr WRIGHT, Mathew (Thomas Jefferson National Accelerator Facility); Dr CASAGRANDE, Fabio (MSU-FRIB); Mr VARGAS, Gerardo (Jacobs Technology-JSC); Mr NATHAN, Joseph (Facility for Rare Isotope Beams - Michigan State University)

Presenter: Dr KNUDSEN, Peter (Facility for Rare Isotope Beams - Michigan State University)

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