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Design and fabrication of the 2K-module for the SRF test facility of Raon

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The first Korean heavy-ion linac, Raon, is based on superconducting radio frequency (SRF) cavities. These cavities will be operated at sub-atmospheric pressures, 2 K. For performance tests of cavities and cryomodules, the SRF test facility of the Raon needs a dedicated heat recuperating system, the 2K-module. Similar to the system of other institutes, the 2K-module of Raon consists of a heat exchanger, a warm pump system, and Joule-Thomson valves. The heat exchanger, which increases the efficiency of the helium refrigeration system, was made by Korea Aerospace University and its performance was verified. The warm pumping system is setting up sub-atmospheric pressure and its pumping speed is 4000 m³/hr for the gas helium. The size of J-T valves is DN 2 which needs filters and heaters. Leak tests will be performed to check the superleaks. The 2K-module will be used for many cryogenic experiments in the test facility.

Author: YOON, Sungwoon (Institute for basic science)

Co-authors: CHOI, Chul Jin (I); Mr KIM, Hyun Jin (Korea Aerospace University); Dr JANG, Hyun-Man (Institute for basic science); Prof. JANG, Seok Pil (Korea Aerospace University)

Presenter: YOON, Sungwoon (Institute for basic science)

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