

**Development of a Variable-Frequency RFQ Linac for the RILAC**, Y. BATYGIN, T. CHIBA, A. GOTO, M. HEMMI, O. KAMIGAITO, M. KASE, S. KOHARA, Y. MIYAZAWA, and Y. YANO, RIKEN, Japan - A variable-frequency RFQ linac which will be used for a new injector for the RIKEN heavy-ion linac (RILAC) has recently been constructed. This RFQ accelerates ions with mass-to-charge ratios of 6 to 27 at up to 450 keV per charge by varying its resonant frequency from 17.7 to 39.2 MHz. The RFQ resonator, based on a folded-coaxial structure with a movable shorting plate, has distinctive features such as the compactness and the wide frequency-tunability. Low- and high power tests of the resonator has shown that the power losses in the cw operation are 6 kW at 17.7 MHz and 26 kW at 39.2 MHz for the designed intervane voltage of 33.6 kV. Acceleration tests in the cw mode have been performed using Argon and Oxygen beams from an 18 GHz-ECRIS at the frequencies of 17.7, 26.1, 34.4, and 39.2 MHz. The maximum transmission efficiency obtained from the first tests was 85%.