RILAC operation

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The RIKEN heavy-ion linac (RILAC) was operated in December 2019. Some statistics regarding the operation of RILAC from January 1 to December 31, 2019 are presented in Table 1.

Table 2 lists the beam service times in the standalone mode of RILAC in 2019.

The following works and tests to upgrade RILAC have been in progress at the LINAC building during the reporting period. The details are described elsewhere in this progress report.

(1) Performance tests were conducted at the new 28-GHz superconducting electron cyclotron resonance ion source (SC 28-GHz ECR ion source). Table 3 lists the operation time of the performance tests in 2019.
(2) The section after the A2 cavity was reconstituted. The necessary preparation for the installation of a superconducting RILAC (SRILAC), middle-energy beam transport (MEBT), and high-energy beam transport (HEBT) was conducted.

We performed the following maintenance works during the reporting period.

(1) In the radio-frequency systems, DC high-voltage power supplies were subjected to annual inspection. The major components with mechanical parts were subjected to simple inspection.
(2) The water pumps were subjected to simple inspection. All cooling towers were subjected to monthly inspection.
(3) All turbomolecular pumps were subjected to simple inspection. Cryogenic pumps used for cavities 3, 4, and 6 and the standby units were overhauled.
(4) All magnet power supplies were subjected to simple inspection.

Table 1. Statistics of RILAC operation from January 1 to December 31, 2019.

Operation time of RILAC	43.7 h
Mechanical problem	0.0 h
Standalone RILAC	23.9 h
Injection into RRC	0.0 h
Total beam service time of RILAC	23.9 h

Table 2. Beam service time of standalone RILAC in 2019.

Beam course	Total time (h)	%
In acceleration room	23.9	100.0
e2	0.0	0.0
e3	0.0	0.0
Total	23.9	0.0

Table 3. Operation time of the SC 28-GHz ECR ion source in 2019.

Ion	Mass	Total time (h)
Ar	40	463.4
Ca	40	650.6
V	51	403.0
Zn	70	1017.6
	Total	2534.6

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