

K500 operations and development

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Introduction

During the 2017-2018 reporting period a total of 21 different beams, including 11 newly developed beams, were used for experiments, and there were a total of 24 beam tunings for these experiments. The SEE program and the radioactive-beam effort are treated separately in this progress report.

Ion Sources

During the shutdown ECR1 was opened for examination, and it was found that there had been no further deterioration in the damaged spot that had developed over a plasma flute on the aluminum wall. A new aluminum plasma chamber and NdFeB permanent magnet bars are ready for assembly into a new, more uniformly magnetized hexapole for eventual installation during the next reporting period.

Cyclotron Beams

New beams of ^{12}C at 11 AMeV, ^{28}Si at 36 AMeV, ^{35}Cl at 5.3 AMeV, ^{44}Ca at 5.2 AMeV, ^{58}Fe at 11 AMeV, ^{59}Co at 13 AMeV, ^{58}Ni at 36 AMeV, ^{63}Cu at 10 AMeV, ^{70}Zn at 15 AMeV, ^{84}Kr at 5.1 AMeV and ^{107}Ag at 11 AMeV were developed for experiments. The majority of experiments used the 2A line devoted to the recoil spectrometer MARS.

Operations

For the period April 1, 2017 through March 31, 2018, the operational time is summarized in Table I, while Table II lists how the scheduled time was divided. Unscheduled maintenance remained quite low. Scheduled time for outsider users, exclusively SEE customers increased again, as has been the case for several years.

Table I. 2017-2018 operational time.

Time	Hrs.	%Time
Beam on target	5920.5	67.8
Beam development	1076.0	12.3
Scheduled maintenance	1488.0	17.0
Unscheduled maint	251.5	2.9
Total	8736.0	100.0

Table II. 2017-2018 Scheduled Beam Time.

Time	Hrs.	%Time
Nuclear physics	1166.0	16.7
Nuclear chemistry	874.0	12.5
Outside collaboration	0.0	0.0
Outside users	3880.5	55.4
Beam development	1076.0	15.4
Total	6996.5	100.0