

## K500 Operations and Development

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### Introduction

During the 1999-2000 reporting period, a total of 130 beams were tuned for experiments, an average of one every 2.4 days during the period that the K500 was operational. The intensities of extracted beams remained roughly the same as those from the last reporting period, but lately a combination of problems has caused these to suffer. One problem is that the vertical section of the injection beam line developed poor vacuum immediately after the January shut-down, and the cause has not been located.

### Ion Sources

The upgraded ECR2 ion source will be addressed in a separate contribution. The beams from ECR1 have been degraded to a certain extent by contamination from various substances, including sputtered chromium and boron trifluoride and from misalignments that possibly occurred with the reassembly of the source after cleaning. With the recommissioning of ECR2, these problems can be address with ECR1 coming off-line for greater periods of time.

### New Pulser Plates

Some experiments require a rapid means of cutting off the beam. The electronic rephasing of the cyclotron dee voltages could not satisfy some experiments, so pulser plates were designed and introduced into the injection line. They are 18 cm long and 1.3 cm apart and located near a focal point. They decrease the transmitted beam by about one-third, but since they only require 100 volts to deflect a 10 kV beam, they will be spaced further apart.

### Operations

For the period April 1, 1999 through March 31, 2000, the operational time is summarized in Table I, while Table II lists how the scheduled time was divided among the experimenters. There were no major repairs during this period. The increase in tuning time is due to the time taken to ready the new NIMROD system at the beginning of its scheduled runs.

**Table I.** 1999-2000 Operational Time.

	<u>Hours</u>	<u>%Time</u>
Beam on target	3755.25	49.7
Tuning cyc. & optics, exp. setup	1381.75	18.3
Beam development	1217.00	16.1
Scheduled maintenance	891.25	11.8
Unscheduled maintenance	315.00	4.1
Idle time	0.00	0.0
Cool-down, transfer	0.00	0.0
Total	7560.25	1000

**Table II.** - Scheduled Beam Time.

	<u>Hours</u>	<u>%Time</u>
Nuclear Physics	1515.75	29.4
Nuclear Chemistry	1812.00	35.1
Atomic Physics	554.75	10.8
Outside Collaboration	478.50	9.3
Outside Users	583.50	11.3
Beam Development	213.5	4.1
Total	5158.00	1000

