Tandem Operation

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In 2005 the tandem accelerator was running 7000 hours (290 days) for experiments. For maintenance each week 6-8 hours were scheduled but not used always due to very reliable operation of the machine. There were two maintenance periods one in March and the other in August.

During a tank opening in May a broken rivet on one of the low energy (LE) charging chains was observed. So we were very close to a chain rupture. In August the 3 charging chains of the LE side were replaced. They were installed in December 1993, running about 75 000 h. The chains on HE side are older, installed in September 1990 running for about 95 000 h. In comparison with the first pelletron chains (after conversion of the machine from belt to pelletrons), which were running 108 000 h at LE and 92 000 h at HE side, respectively, the chains on HE side are obviously at their end of live time. We ordered at the end of the year 3 new chains for HE side. Installation is planned in 2006 if necessary.

Only a few days for unscheduled tank openings were necessary for:

- replacement of idler wheels,
- removing a small piece from the tank floor,
- replacing corona points,
- shortening all charging chains on LE side,

Operating statistics are shown in fig. 1 and table 1. The maximum terminal voltage applied for experiments is shown in fig. 1. Up to a terminal voltage of 13 MV the risk of sparking was very small, and therefore the users tried to avoid higher voltages for their experiments as in the years before. About 62% of the available beam time is devoted to applied physics in the field of AMS (29%) and materials analysis (23%). About 31% for nuclear physics and the rest for tests of new setups like Shiptrap or detector test for CRESST. The instrument most frequently in use, with about 28% of available beam time, was the Q3D magnetic spectrograph for nuclear physics as well as applied physics. About 18% of beam time was used for AMS studies with the GAMS system and 6% account for the microprobe SNAKE.

The control system based on an ARCNET network with about 60 node computers was running very stable all the year. Almost no new features were implemented and almost no changes in the programs were done. In 2005 a new technician for maintenance of our elecetronics was employed. But there is still no electrical engineer. A problem of our aging electronics is that it becomes more and more difficult to purchase spare parts. Some of the IC's will not be on the market in a few years. Therefore some redesign of PCBs is necessary.

No new beam lines were implemented and no existing removed. At the position of the buncher of the postaccelerator a chamber for irradiation of samples for the development of new fuel elements for the FRM-II was installed. An implanter for radioactive ^{32}P has been assembled and testet with stable phosphorus in target room II. The whole setup will be moved to the application center of the FRM-II as soon as possible.

In 2005 we had 750 visitors in groups most from schools and 594 visitors at the open house.

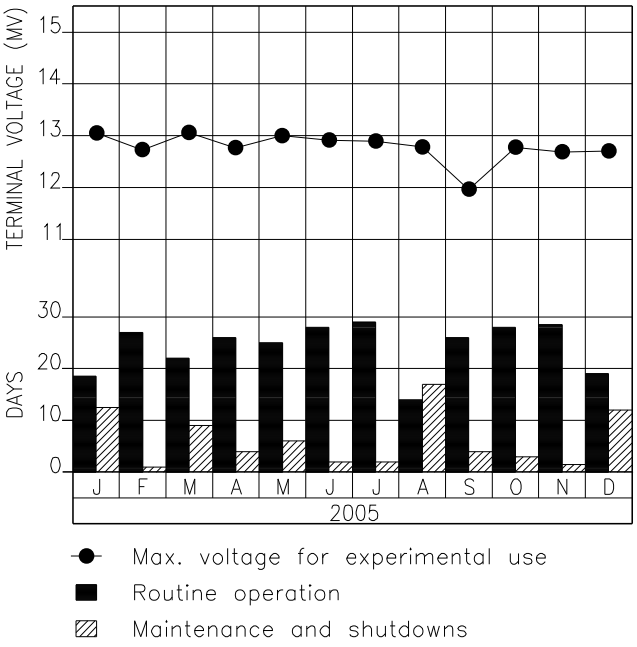

Fig. 1: Operating statistics 2005

ION	^{1}H	^{2}H	^{3}He	^{4}He	^{7}Li	^{12}C	^{16}O	^{28}Si	^{35}Cl	^{53}Mn*	^{58}Ni	^{60}Fe*
%	8.9	5.3	6.5	4.3	3.3	3.1	2.1	0.7	6.0	7.0	4.0	8.8
ION	^{63}Cu	^{66}Zn	^{79}Br	^{79}Se*	^{107}Ag	^{127}I	^{129}I*	^{182}Hf*	^{197}Au	^{210}Bi*	^{239}Pu*	
%	0.3	2.2	0.3	1.0	0.9	12.2	6.4	0.9	11.7	2.9	1.2	

Table 1: 2005 ion beam time in percent of total available beam time. The isotopes marked with an * were measured in AMS studies.