

Measurement October 23th: Longitudinal momentum spread and micro bunch filamentation

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PLAN

The experiment was initially scheduled for October 16th between 6:00 am and 02:00 pm. Due to a science evaluation the experiment was shifted to Thursday, October 22th between 4:30 pm and 10:00 pm o'clock. Again the experiment was shifted to Friday, October 23th between 6:00 am and 01:45 pm due to the extra time of one day for the FRS-Experiments.

It was planned to measure again the energy loss for high current in the TK, also the energy dependence over the length of the macro plus. The dependence of the momentum spread on the multi-turn injection (MTI) for high current was measured as well.

The experiment needs the highest UNILAC current. For this experiment we measure without the last stripper foil. We would be sure to measure not some effects from this stripper foil. Also in the first and second measurement we injected only one turn to be sure to measure no effects from the multi-turn injection.

PROBLEMS

There were no machine problems. It was possible to measure over the whole shift time. However, the storage space on the Sony Tektronix Real-Time Spectrum was full and we had to delete data.

For the future we propose that each user saves there data external and delete there data on the Tektronix after the external restoring. Also, each user is responsible for this own data.

MEASUREMENTS SETTINGS

For all experiments we used a coasting U^{27+} beam with high currents up to $N = 1.5 \cdot 10^9$ at injection energy. The maximal UNILAC current was 2.3 mA. The expect maximal UNILAC current was a round 5 mA.

We measured the momentum spread and the momenta using the Sony Tektronix Real-Time Spectrum analyzer. Also we measured bunch profiles from the Schottky pick up in the time domain from the LeCroy.

FIRST RESULTS

The experiment was done for weak space charge because of the relatively small UNILAC current. Only if the number of injected turns was larger than 4 turns we observed space charge effects.