

MATS - LaSPEC meeting

York, September 28th, 2016

Present: Michael Block, Bradley Cheal, Timo Dickel, Frank Herfurth, Alexander Herlert, Ari Jokinen, Jörg Krämer, Iain Moore, Wilfried Nörtershäuser, Wolfgang Plass

1) LEB building status update – (J. Krämer, A. Herlert)

The latest status of the LEB civil construction planning was presented. An updated layout of the MATS/LASPEC area was shown (see transparencies attached to the minutes). In this modified version the laser beam lines and the MATS beam line were switched to bring the laser beam lines closer to the laser lab. This will simplify the transport of laser light with optical fibers as well as mirrors and avoid obstructions for the access to the MATS beamline.

In the present MATS beamline all installations foreseen for phase 0/1 operations can be placed on the ground floor level. However, space is still available for future extensions requiring a platform on the second floor level restricted by the crane which will be at a height of 7m - 8m (check). At present the installation of an EBIT is kept as one such option for phase 2.

There are a few boundary conditions due to the building layout and infrastructure installations. This concerns for example the position and angle of the transport beam line from the cryogenic gas cell. We are still awaiting the final technical specifications detailing the length of the magnets in the S-FRS which will impact the positioning of the cryogenic stopping cell.

At the moment we need to define the equipment envelopes for the civil construction planning process. The technical coordinators are in touch with Jürgen Gerl concerning any civil construction matters for MATS/LASPEC.

2) Administrative Issues (A. Herlert)

The present strategy for the civil construction tendering procedure was presented. Two batches (south and north) are planned. The Super-FRS is part of the second batch. The civil construction is anticipated to begin in 2017.

An update of the MATS/LASPEC funding status was presented down to the work package level. The definition of the work packages required for phase 0/1 should be double checked and updated if necessary. The funding of all items required for phases 0/1 should be fully covered, at least by an expression of interest.

For both, MATS and LASPEC, funding to cover for example beamlines connecting the gas catcher and the RFQ cooler buncher is still an open issue. In LASPEC there are issues with respect to the UK funding to be clarified; this is namely connected to the collinear laser ion beamline. It is unlikely that such funding will be available before 2022, as the current application for consolidator grants is underway and will last until the 2020/21 financial year with no application for LaSpec in this round. The MATS precision trap should clearly be part of phase 1. However, the work package responsibility and the funding assignment should be discussed again in the context of updating the work packages.

As no space will be available to install a significant part of MATS/LASPEC at GSI/FAIR before the start of the Super-FRS, MATS/LASPEC experiments in phase 0 will basically concern MATS/LASPEC equipment being used at other facilities, for example the operation of TRIGA-TRAP in Mainz and the use of the TRIGA-LASER beam line at Argonne National Lab.

Consolidated project plans on a work package level (including funding status) have to be prepared for MATS/LASPEC. The responsible work package leaders will be contacted. A timely installation of all MATS/LASPEC equipment in the LEB building for phase 1 should be reflected in these project plans.

Alex will prepare EDMS accounts for MATS/LASPEC to share various documents such as drawings, minutes, presentations etc.

The NUSTAR database for administration has to be updated and consolidated. The list of members of MATS/LASPEC should be updated in the process. All members of our sub collaborations will automatically become NUSTAR members. In the new database framework local group coordinators can be defined. They manage the local MATS/LASPEC teams and keep the information up to date. PhD students should be included into the database. While the local coordinators confirm that new registrants represent their group, the membership in the MATS/LAPSEC collaborations has to be approved by the MATS/LASPEC spokespersons. A list of group coordinators will be prepared and sent to Heiko Scheit. The database update should be completed until the NUSTAR 2017 spring meeting.

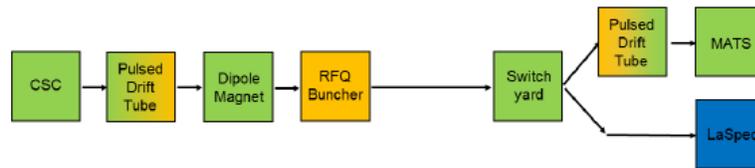
3) HV options for the LEB beamline (F. Herfurth, W. Plass)

Frank and Wolfgang have prepared a document addressing the different HV options for the MATS/LASPEC beam lines including the cryogenic gas cell. The document has been circulated prior to the York meeting within the collaboration. No immediate feedback was received.

Frank presented the document briefly. Under the assumption that beams extracted from the cryogenic gas cell (at intensities in excess of 100/s) are sufficiently clean, a mass separator dipole magnet is not of highest priority. Wolfgang presented results from several online tests of the cryogenic gas cell at the FRS including data from the most recent beam time in 2016. All in all, mass spectra recorded with the MR-ToF indicate that for different production schemes (fragmentation, in-flight fission) the ions of interest are extracted as singly or doubly charged atomic ions. Under certain conditions some “dirt” of loosely bound molecular ions from the rest gas was observed. In the recent beam time collision-induced dissociation of loosely bound molecular ions has been employed to remove such background ions. Besides several improvements with respect to pumping and cleanliness of the gas cell implemented since 2012, further measures such as getter materials are foreseen. Thus, at present additional beam purification stages are not considered a major priority.

However, since a bending device in the transport beamline from the gas cell to the buncher is anyhow needed, it is suggested to foresee a dipole bending magnet. This magnet could be similar like one in use at HITRAP that is operated at 5 kV and provides a moderate mass resolving power of about 50.

4b



Beamline at ground and CSC at ground. RFQ at several kV. Pulsed drift tubes for RFQ Buncher and MATS.

Figure 1 Preferred option 4b for the MATS/LASPEC beamlines under present conditions.

Based on the above mentioned considerations and the discussions in recent MATS/LASPEC meeting it was decided to pursue “option 4b” as the most reasonable solution for the HV settings of MATS/LASPEC setup. It allows us to operate the cryogenic gas cell and the MATS traps at ground potential. The considerations of the different scenarios as summarized in the distributed document will be part of the cryogenic gas cell TDR.