18th October 2022

ESS Spectroscopy STAP meeting

VESPA project: brief report on the activities done between early May 2022 and mid-October 2022

The present document is a brief report dealing with the activities of the VESPA team performed in the period between early May 2022 and mid-October 2022, *i.e.,* from the previous Spectroscopy STAP meeting (on the 3-4/5/2022) until now. We focus on the three following points, including the answers to the comments contained in the latest report by the *ESS Spectroscopy STAP panel:*

1) present status of the VESPA project;
2) recent advancements in the VESPA project;
3) reply to the latest report of the *ESS Spectroscopy STAP panel.*

1) Present status of the VESPA project

At the end of 2021, rather unfortunately, the VESPA team has begun to gradually enter a lethargic phase which is lasting until now. In particular, two key components of the working group endowed with important skills *(i.e.,* the capability to use the CAD software suite CATIA in a professional way, a deep knowledge of the McStas neutron ray-trace simulation package) left the VESPA team between November 2021 and February 2022. To date they have not yet been replaced. As a consequence, the team shrank substantially, ending to include only three researchers (the lead scientist, the lead engineer, and one post-doc) plus, of course, the project leader, who is, however, an academic. Given this uncertain scenario, in July 2022 the lead scientist decided to resigned and programmed his final exit from the VESPA project at the end of 2022. In addition, all the pre-procurement procedures concerning crucial components of the primary instrument *(e.g.,* the neutron guide) slowed down and eventually stopped. Needless to say, as a result of this unclear situation, the *"guide-system and heavy shutter call for tender verification (CTV)"* as well as the *"cave CTV"* have been postponed to a later date.

In the following, we are not going to provide an explanation of the present inactive status of the VESPA project, since this would imply to delve into managerial, administrative and, perhaps, political questions that, on one side we are not authorized to deal with, and, on the other, are probably not interesting for the *ESS Spectroscopy STAP panel.* The only additional point we want to stress before ending this paragraph is the fact that, as VESPA team, we do not feel responsible for the present situation since both the hiring of new staff members and the procurement procedures have been blocked at a managerial level on which, needless to say, we are able to exert no influence.

2) Recent advances in the VESPA project

Given the scenario sketched in par. 1, we have little to mention as far as the recent advancements in the VESPA project are concerned. However, there is a single event, which is worth being reported, related to the Neutron Beam Port Insert (NBPI) and Neutron Beam Optics Assembly (NBOA, see Fig. 1) integration: the first eight NBPIs (including the VESPA one) have arrived at ESS. Their respective NBOAs have been integrated. By end of October, all the inserts for north, south, and east sections (VESPA is using the beam port "East 7") will be properly sealed and vacuum tested, ready for installation into the ESS monolith.

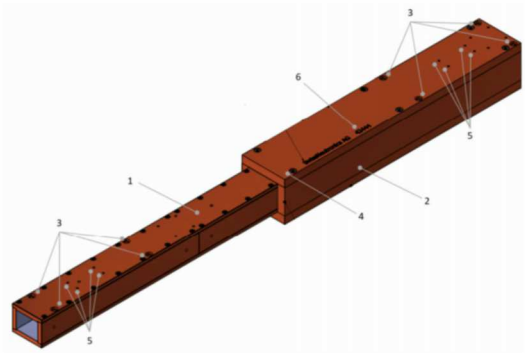

Fig.1. Neutron Beam Optics Assembly guide unit for VESPA with shielding jacket.

3) Reply to the latest report of the ESS Spectroscopy STAP panel

1. *The instrument teams continue with the instrument designs and construction. Most instruments made good progress, though some more than others.*

Please, see par. 2, which is entirely devoted to this subject.

2. *Many instruments suffer from staffing problems, resulting in delay compared to the foreseen schedule. The STAP had some concern about the progress with VESPA.*

Please, see par. 1, which describes the present staffing problems of the VESPA team.

3. *As a general observation, there are serious risks for all projects related to the ESS common projects being delayed or lacking resources, as there are common projects on detectors, monitors, electrical design, utility design, PSS.*

The CNR management of the VESPA project has formally agreed to join two ESS common projects: the "Beamline Shielding Common Project" and the "Chopper System Common Project". However, given the difficult situation of the VESPA project, the risks represented by the common project criticalities (e.g., the recent 9-month delay of the Chopper System Common Project) can be temporarily considered as mild problems.

4. *The STAP is concerned whether the multigrid detectors will achieve the performance required by some day1 instruments, especially CSPEC. The STAP advises instrument teams and management to:*

- take into account the outcome of the detector tests currently running at LET/ISIS;
- take into account the outcome of the recent review panel for the VMM electronics (03.2022);
- take further decisions TOGETHER with the instrument team, based on the scientific specifications.
Once a decision has been made, the STAP urges the ESS to support the instrument teams.

The VESPA group has not yet discussed these points.

5. *The monitor project seems to be paused for similar reasons to those which afflicted the MG detector development. Monitors are of critical importance to the instruments, and it is vital that the common monitor project is revived and progressed.*

As far as the VESPA project is concerned, it has been agreed that beam monitors will be developed, making use of the gas electron multiplier (GEM) technology, by a group based in the Physics Department of the Milano-Bicocca University (Milan, Italy).

6. *We strongly recommend that ESS takes the initiative to improve the communication between the NSS and the instrument teams on technical topics / on working level (not only about management and organization). The interaction of the NSS/management and the instrument teams on hot commissioning also needs to be started*.

An overview from the ESS group working on "hot commissioning" will be provided.

7. *The interaction of DMSC and the instrument teams concerning detector readout / analysis of electronic signals needs to be started.*

No interaction with the "Data Management and Software Centre" can be reported.

The VESPA Team