



## MINUTES

### 4<sup>o</sup> Joint Technical Meeting ELISA – 01 July 2021

Participants: Borja Fernandez, Vittorio Bencini, Enrique Blanco, Simon Cherault, Yann Lechevin, Gunnar Lindell, Alessandra Lombardi, Serge Mathot, Chiara Pasquino, Hermann Pommerenke, Jami Sarnikorpi, Patricia Verheyden

Summary of the questions/discussions:

- **Integration:** Following our last integration schematic, see the minutes of the 3<sup>th</sup> meeting, the public will circulate close to the RF amplifier before to get close to ELISA. This raises the question of the proximity of the public and the RF power system. It is proposed to make measurements, with TE / MSC and HSE, on similar installations: the new SPS amplifiers and the amplifier of MACHINA. The magnetic field exposure limitation should be 0.5 mT and 1 V/m for the electric field (these values have yet to be confirmed). These measurements, which will be entered in the Safety File, will allow us to consolidate the current integration scheme, even if only the measurements on the final installation will be relevant to validate this integration proposal.

- **Control system:** BE/ICS will have an associate (PJAS program) to work for one year on the ELISA control system. This person will start in September 2021.

- **LEBT:** Pumping ports may be needed before the RFQ (see the presentation on the vacuum system by Chiara). This will have the consequence to increase by about 100 mm the distance between the source (Einzel lens) and the RFQ. The idea is still to not have a vacuum valve between the source and the RFQ to keep minimum this distance.

- **Safety File:** The Safety File will be signed by Mike and Patrick. The descriptive part will describe 8 systems and their subsystems with for each case a complete description and a risk identification table. The limitation of each risk will be described in the demonstrative part. The details of this Safety File organization are still to be discussed with Simon.

- **Vacuum system, presented by Chiara:** The vacuum system proposed by Chiara would consist of NEG pumps and NEG + ionic pumps. This presents the enormous advantage for ELISA of having a completely silent pumping system, there is not even a primary pump! The system will be started up with a turbo / primary pump system which is stopped and removed once the NEG and ion pumps can take over. This "mobile" group will be used also for the regeneration of the NEG pumps, every two or four weeks. This regeneration can be done within one working day, on the Monday when Science Gateway is closed.

NEG pumps would be necessary between the source and the RFQ to obtain a vacuum of  $1 \times 10^{-7}$  mbar in the RFQ while the hydrogen flow rate from the source is  $1 \times 10^{-3}$  mbar.l / s (value measured on MACHINA which uses a similar source). But it should be noted that the ELISA's RFQ (the PIXE-RFQ) is designed to operate with much lower voltages than most other RFQ's: maximum 35 kV for the PIXE-RFQ but 65 kV for the HF-RFQ and 80 kV for Linac4. Also, we have systems in the Linac4 with voltages of 35 kV and vacuum of the order of  $4 \times 10^{-5}$  mbar, which would be the vacuum inside the ELISA's RFQ without the additional NEG pumps between the source and the RFQ.

This vacuum limit in the RFQ that we impose at  $1 \times 10^{-7}$  mbar is therefore to be discussed again as well as the choice of whether or not to put pumps between the source and the RFQ!