**LhARA WP6 Meeting**

**Notes and Actions from meeting held on 6December 2022**

**LhARA wiki location for documents related to this meeting:** [**here**](https://ccap.hep.ph.ic.ac.uk/trac/wiki/Research/LhARA/DesignAndIntegration/Meetings/2022)

**Present:** Neil Bliss, Kenneth Long, Jaroslaw Pasternak, William Shields, Colin Whyte.

**Apologies:** Ajit Kurup, Hywel Owen.

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| --- | --- | --- |
| **Actions** | **Description** | **Status** |
| 22-11-08-04 | **Will Shields** to explore the capability of GPT Optimisation programme (GDFSOLVE) | In progress |
| 22-11-22-02 | **Neil Bliss** to update the draft Device naming Convention. | Complete |
| 22-11-22-03 | **Will Shields** to identify a list of anomalies, missing components or errors spotted in the draft Device naming Convention. | In progress |
| 22-11-29-01 | **Elisabetta Boella** to provide a new 3D particle distribution from the source. | In progress |

**Agenda:**

1. Actions from last meeting.
2. Simulations.
3. Device Naming Convention.
4. Feedback from WP3-WP6 CAD discussion.
5. Preparations for End station consultation meeting 1 to be held on 14th December.
6. A.O.B.

**1. Actions**

Device naming convention document updated.

* **1272-pa1-ctrl-rpt-0001-v0.5-LhARA-device-naming**
* Kicker magnet (KICK), Septum Magnet (SEPT) and FFA Combined Function Magnet (CFUN) added to component name examples.

Other actions listed are in progress.

**2. Simulations**

**Presentation by Will Shields** document: **20221206\_WShields**

**Summary**

**Work completed:**

* Revisit models with HT’s beam

**In Progress:**

* **AP**: GPT optimisation of capture section – gdfsolve.

**To do:**

* Follow up on Gabor Lens optimisation solutions
* Identify locations for non-beam transport systems + add to model
* Develop OPAL model of FFA – need JP input

Will confirmed that the simulation starts at 10 cm from the target.

Will also pointed out that the collimator optimisation discussed is difficult without a broader beam. There was some clarity required to understand HTs parameters concerning whether the beam through the nozzle is already collimated. Collimated or user cuts. +/- 2% at the nozzle exit. See slide 6 for HT collimator settings reducing energy spread further and ~ factor of 2 drop in transmission.

**Action: 22-12-06-01: Will Shields** to contact HT if possible or discuss with Ken collimated or user cuts at nozzle.

Jaroslaw/Will commented on a bug found in the high energy extraction line. Two versions of filed strength that are both incorrect, resulting in the high energy line being not parallel to the low energy line. Phase 1 matching is still in progress.

**Action: 22-12-06-02: Jaroslaw Pasternak/Will Shields** to correct field strength in the extraction line dipole.

**3. Device Naming Convention**

Neil has distributed 2 versions of the device naming convention. Adding the following component name examples:

KICK - Kicker magnet

SEPT – Septum magnet

CFUN – FFA Combined function magnet

PM – Profile monitor

**Action:** **22-12-06-03: Neil Bliss** to update the schematic to amend the Kicker and Septum component names.

**4. Feedback from WP3-WP6 CAD discussion**

Neil Bliss, Clive Hill and Chris Baker had a meeting on the 5th December to discuss Clive adding more detail to the Gabor Lenses in the LhARA CAD model. A present the model contains am illustrative volume without any detail of the electrodes, coil and vacuum pumping configuration. The idea being that when Clive updates the CAD model to reflect the new geometry of devices from the new WP1.6 baseline, the Gabor lens devices could be updated at the same time to reflect a more realistic representation.

Chris confirmed the following:

* That the tasks in the CDR phase (2 years) are to design the test bench
* Construct the test bench after 3 years
* Perform experiments 3 – 5 years
* 4 years before we will have a good idea of the Gabor lense configuration
* 4 years to make choice between gabor lense or solenoid back up option
* Potentially reduce timescales with additional funding
* Chris is due to meet with Jaroslaw later this week to agree Gabor Lenses baseline description as a record from the previous WP1.3-WP1.6 meeting.

Chris agreed to provide a CAD model in STEP format of the proposed Gabor Lens test bench shown in figure 1.

**Action:** **22-12-06-04 Chris Baker** to provide a CAD model of the Gabor Lens test bench

**Action:** **22-12-06-05 Clive Hill** to import the CAD model into Creo to provide a better image of the proposed configuration **that we know will change** after experiments to optimise the parameters.

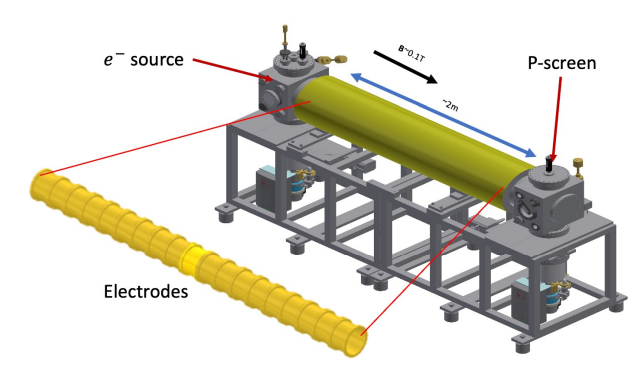


Figure 1: Proposed Gabor Lens test bench

**5. Preparations for End station consultation meeting 1 to be held on 14th December**

Neil Bliss presentment slide images used at the review meeting held on 27th October. Document: **1272-pa1-wp2-prs-0002-v3.0-LhARA-review-WP6-infrastructure-2022-10-27.** For the End station consultation meeting addition images of the high energy line elevation and clarity of the all end station in the plan view would help with the discussions. Neil confirmed he would provide the images on 7th December.

**Action:** **22-12-06-06: Neil Bliss** to provide the additional images in readiness for the end station consultation meeting.

**6. AOB**

None.