

# Report from ZAOT dichroics design for LAr operation for VD-Module-0

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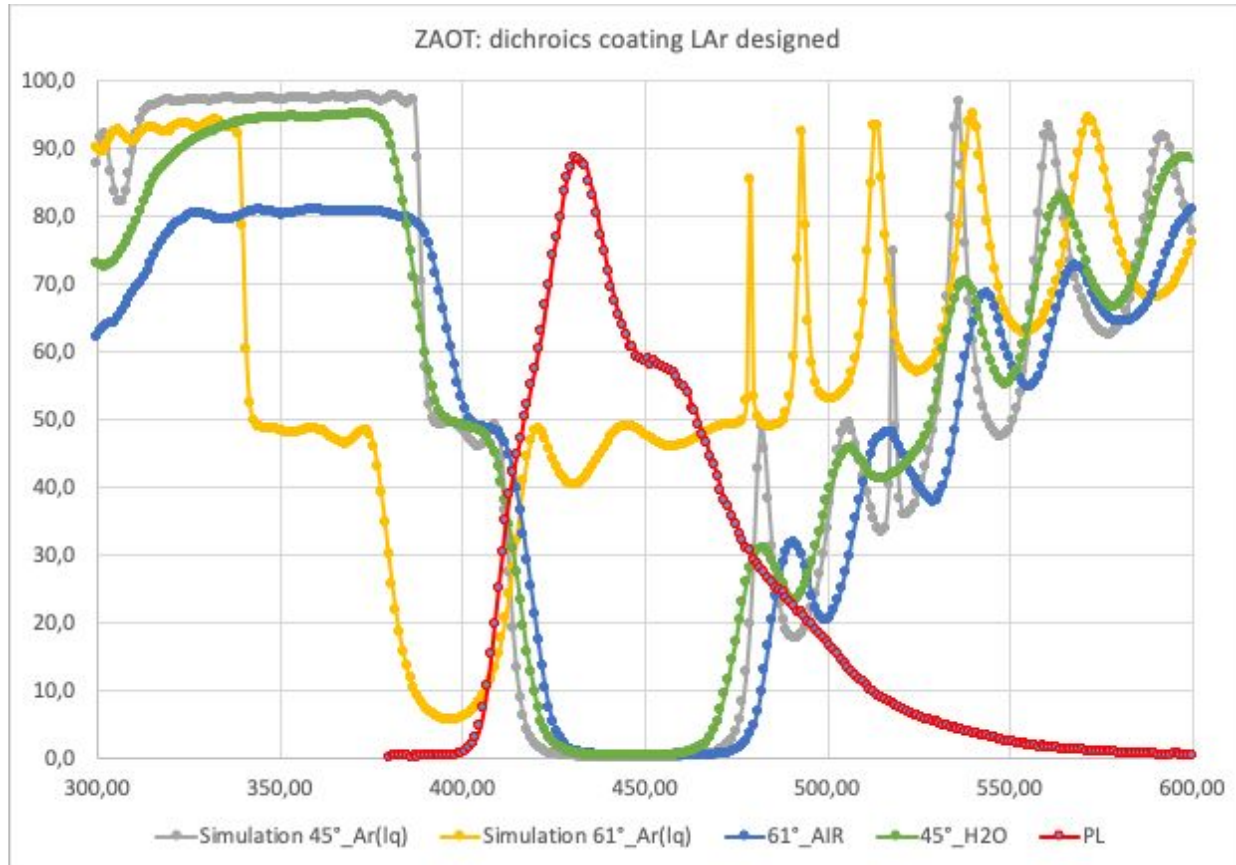
# XA Components

| Component          | Size/Number                        | Groups involved                         | Manufacturer              |
|--------------------|------------------------------------|---|---------------------------|
| Mechanics          | 660 x 660<br>16 units              | CSU,IOWA,NIU<br>(US)                    |                           |
| WLS<br>Lightguides | 625 x 625<br>max<br>16 units       | INFN-MiB,UniMIB (Italy)                 | G2P (Italy)<br>LC (Italy) |
| Dichroics          | 150 x 150<br>200 x 97.5<br>97 x 97 | CIEMAT, IFIC (Spain)<br>INFN-MiB(Italy) | PE<br>ZAOT                |
| pTP coating        |                                    | UniCAMP (Br)                            | UniCAMP                   |
| SiPMs              | 2560                               | CIEMAT, (Spain),<br>INFN,UniMiB (Italy) |                           |
| Flexes             | 128                                | UCSB,FNAL,INFN-MiB                      |                           |

# Dichroics

- Two Manufacturer
  - PE (Spain):
    - 150 x 150 mm → 16 per XA side
    - LAr designed
  - ZAOT (Italy):
    - 202 x 97.5 mm → 18 per XA side
    - 150 x 150 mm → 16 per XA side
    - LAr designed
- pTP coating
  - Campinas
- Glasses will travel back and forth
  - EU → Brazil (Shipped/Hand Carried)
  - Brazil → EU (Shipped/Hand Carried)

# Measurements in water, sims in LAr&water



# pTP evaporation capabilities @ Campinas

(agreed with Ana Machado)

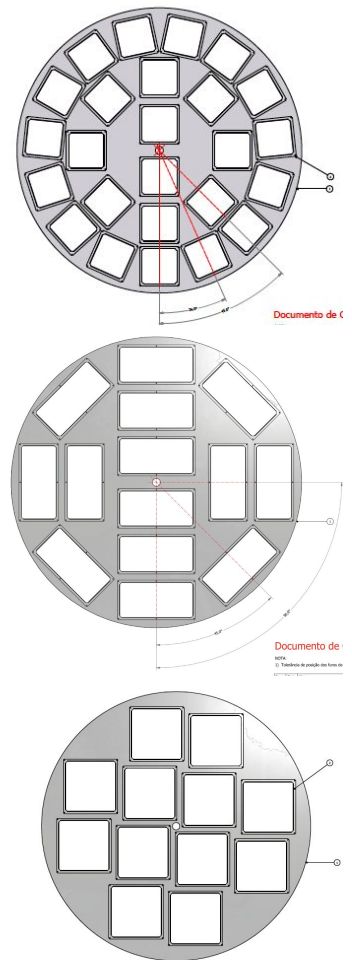
| Size<br>mm x mm | glass/batch<br># | n.batch/day<br># | glasses/week<br># | equivalent 2 sides<br>XA-VD/week |
|-----------------|------------------|------------------|-------------------|----------------------------------|
| 97 x 97         | 25               | 2                | 250               | 3.5                              |
| 202 x 97.5      | 14               | 3                | 210               | 5.8                              |
| 150 x 150       | 12               | 3                | 180               | 5.6                              |

## Coating periods:

- Nov29 to Dec19 2022
- Jan09 to Jan20 2023

## Coating thicknesses:

- 430u/cm<sup>2</sup> central ring
- 340u/cm<sup>2</sup> middle ring
- 240u/cm<sup>2</sup> external ring



# Tentative Plan Little Contingency (Carla)

To be checked with ZAOT if they can produce 170 filters in November

|                  | Oct 22 | November 22            |       |      |                  | December 22 |         |       |       | January 23 |         |         |         |
|------------------|--------|------------------------|-------|------|------------------|-------------|---------|-------|-------|------------|---------|---------|---------|
|                  | 4      | 1                      | 2     | 3    | 4                | 1           | 2       | 3     | 4     | 1          | 2       | 3       | 4       |
| ZAOT:            |        |                        |       |      |                  |             |         |       |       |            |         |         |         |
| design           | Blue   |                        |       | Blue | Blue             |             |         |       |       |            |         |         |         |
| production       |        | (32+128)x(143.8x143.8) |       |      |                  | ????        |         |       |       |            |         |         |         |
| QC & delivery    |        |                        | Green |      |                  |             |         | Green |       |            |         |         |         |
| shipping         |        |                        |       |      | Black            |             |         |       | Black |            |         |         |         |
| pTP coating      |        |                        |       |      |                  | Magenta     |         |       |       |            | Magenta | Magenta | Magenta |
| delivery at CERN |        |                        |       |      |                  |             | Yellow  |       |       |            |         | Yellow  | Yellow  |
| PE: 150 x150     |        |                        |       |      |                  |             |         |       |       |            |         |         |         |
| design           |        | Blue                   | Blue  |      |                  |             |         |       |       |            |         |         |         |
| production       |        |                        |       |      | 64 x (150 x 150) |             |         |       | 128   |            |         |         |         |
| QC & delivery    |        |                        |       |      |                  | Green       |         |       |       |            |         |         |         |
| shipping         |        |                        |       |      |                  |             | Yellow  |       |       | Black      |         |         |         |
| pTP coating      |        |                        |       |      |                  |             | Magenta |       |       |            | Magenta | Magenta |         |
| delivery at CERN |        |                        |       |      |                  |             |         |       |       |            |         | Yellow  | Yellow  |

# Tentative Plan No Contingency (Anselmo)

0. IFIC/CIEMAT order the 144x144 pTP coating disc (available end of November)
1. ZAOT produces 40 (202 x 97.5)+128 (+spares) 144 x 144 filters for third week of November
2. PE produces 64 (+spares) 144 x 144 filters for end November or beginning of December
3. Ship/Hand carry to Campinas on November 28th with ZAOT filters (and if PE is on time also with PE)
4. Ship/Hand carry back to CERN with coated filters on Dec. 10th
5. Second batch of filters for both PE and ZAOT with optimised layers is ordered mid-end November.
6. PE produces 128 (+spares) 144 x 144 optimised filters for end of December
7. ZAOT produces 64 (+spares) 144 x 144 optimised filters for end of December
8. Ship/Hand carry campinas on January 7th with ZAOT and PE filters
9. Ship/hand carry to CERN with coated filters on Jan. 21st