

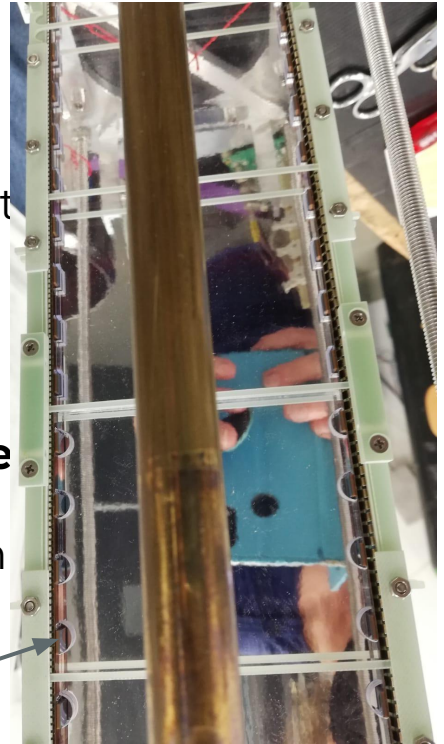
WLS and dichroics for v4&v5

C. M. Cattadori



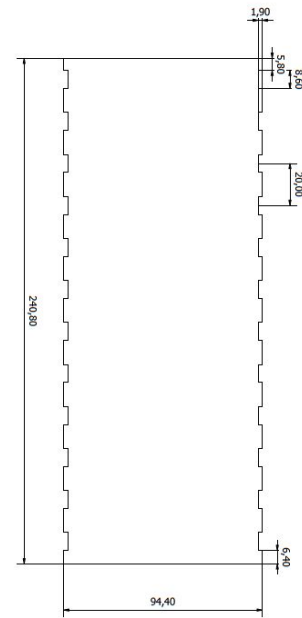
WLS plates for with Edge dimples

- Edge Dimples:
 - to improve the light extraction.
 - few shapes have been proposed/tested
 - sym & meas. prefer WLS with small dimples (see Marcio Adames work) and reflector
 - No conclusive PCE exp. result yet available (CBs & test stands at NIU&MiB)
 - shapes must be doable at laser cut
- Measurements at MiB will resume tomorrow 12 October 2022 on a HD-SC with dimpled WLS
- **Decision on Dimple size and shape for Module-0 needed by mid of November.**
- Available and tested at MiB the SiPMS coupling to WLS in LAr. Mechanical and S/N (~8) measurement performed
 - flat edges (v1 and v2) laser cut
 - flat dimples v3 (2 sides glued, 2 sides spring loaded)
 - parabola dimples & flat (v4)
 - cyl dimples (v5) under test with HD-XA



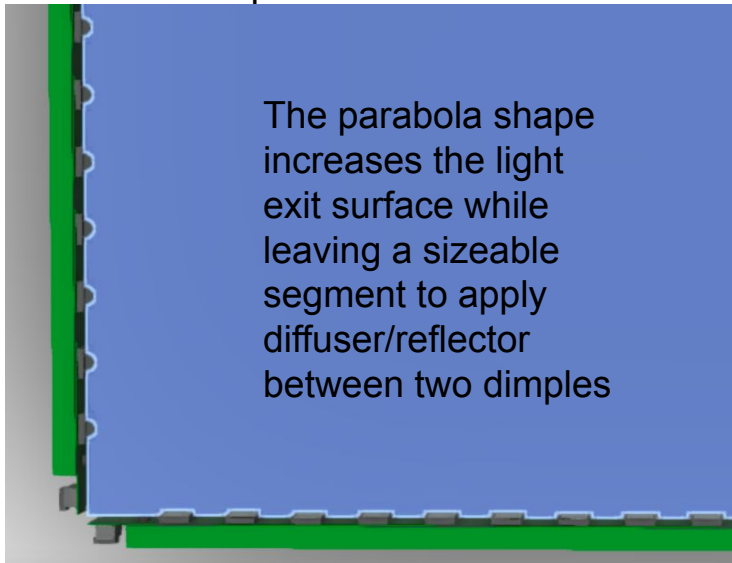
WLS plates for with Edge dimples

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 - to improve the light extraction.
 - several shapes have been proposed/tested
 - sym & meas. prefer WLS with small dimples (see Marcio Adames work) and reflector
 - No conclusive exp. results yet available (neither from the CB program nor from test stands at home institutions)
- Measurements at MiB will resume tomorrow 12 October 2022 on a HD-SC with dimpled WLS
- **Decision on Dimple size and shape for Module-0 needed by mid of November.**
- Available and tested the SiPMS coupling to WLS with
 - flat edges (v1 and v2) laser cut
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 - cyl dimples v5 under test with HD XA

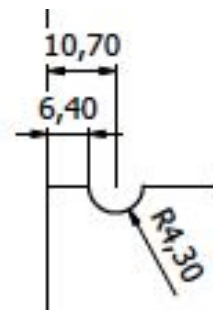
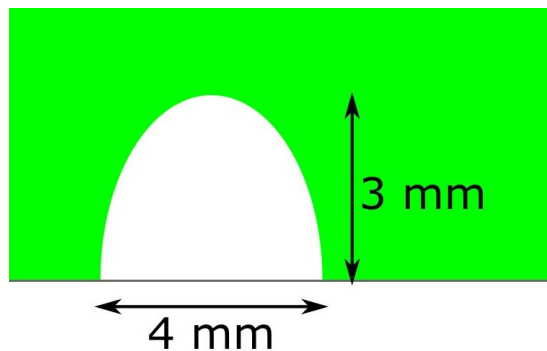


WLS plate for v4 and v5

- The 4th and 5th plate produced in 2021 have been shaped
 - v4: 2 sides flat: 1.2 mm depth 8 mm wide. 2 sides cyl ($r=4$ mm)
 - v5: 2 sides flat: 1.2 mm depth 8 mm wide. 2 sides elliptical 3 mm depth, 4 mm wide
 - plate size after laser cut 593 x 593 mm

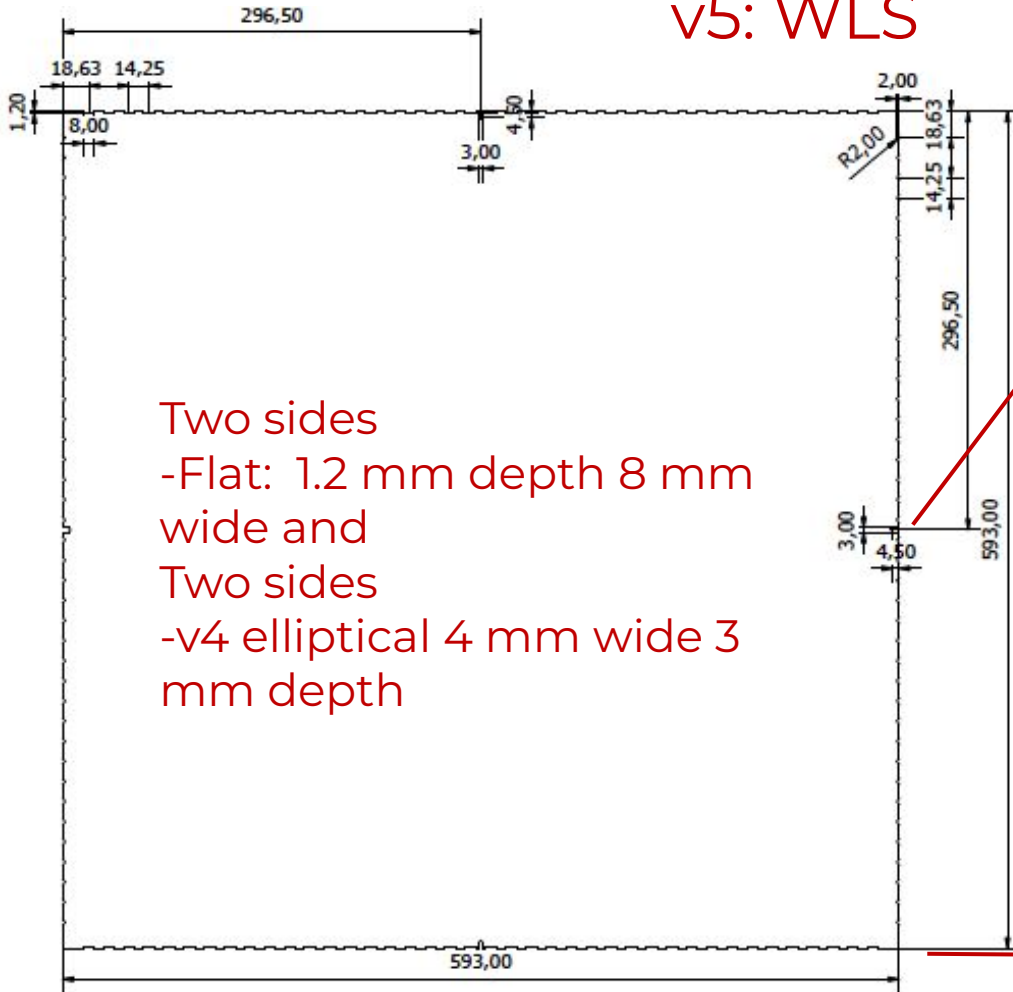


The parabola shape increases the light exit surface while leaving a sizeable segment to apply diffuser/reflector between two dimples



$r=4.3$ mm includes the cut

v5: WLS



Two sides
-Flat: 1.2 mm depth 8 mm wide and
Two sides
-v4 elliptical 4 mm wide 3 mm depth



Dichroics for v4&v5

- ZAOT, designed at AOI= 45deg in air
 - 20 x (202 x 97.5) mm²: pTP evaporation performed at Campinas with some inhomogeneities
 - 40 x (97 x 97) mm²: don't know status of evaporation and delivery
 - delivery at CERN: To be defined by Campinas

WLS plates for Module-0

- **Max Size: 625 x 625 x 4 mm³**
- Purchase Order for 20 laser cut plates is being issued by INFN-MiB to G2P company (funds available since yesterday)
- Production plans:
 - October: refurbishment and commissioning of the reactor for pDUNE_VD production
 - November: Production of 20 (16 + 4) units (spares and for tests at other institutions)
 - edge laser cut at an external Company (v1-to-v5) showed very good results
- **Expected Delivery: By end of November (w. edge dimples)**