Cathode design

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Cathode design:

- Overview
- Modules
- PCB Board Voltage divider connection
- HV Degrader Connection
- Ground Grid
• Cathode is a Stainless Steel structure of 6mx6m
• Connected at the bottom of the Drift Cage
• Mechanical connection points are at the external perimeter
• Structure is self-supporting
• Entire Cathode will be at 300KV
Overview

• 4 identical Modules bolted together

• Mechanical Structure consists in:
  – External Round Pipe of 40mm Dia
  – Internal Rectangular pipes 20x40x2mm (with round edges)

• Grid consist in 20 mm dia SS pipes with 105mm pitch

• Crossed pipes orientation

• Material: Stainless Steel

Transportation BOX Size: 3.2m x 3.2m x 0.5m
Connection to PCB Board HV divider (modules) 2 and 4

Connection to HV degrader (module 4)
Overview

- Connection between modules is with M8 Screws and Nuts
- Connection every ~300mm at top and bottom structure
Module

- Module is 3.135 x 3.135 x 0.24 m
- Holes everywhere in the profiles to allow Lar to go through (avoid stuck bubbles)
  - Cathode Module: 136 Kg
  - Pipe Grid 35 Kg

Module weight 171 Kg x 4 Modules = 684 Kg
PCB Board Voltage divider connection

- 2 modules have special connection for the PCB Board
- Full rod (dia 40mm) insert of 100mm length machined in order to accommodate the PCB Board
• 1 Module have a special connection for the HV degrader
• Full rod (dia 40mm) insert with «cap» of 50mm length machined for cable fixing
Ground Grid

- Same as for the Cathode it consists in 4 identical modules
- Geometry exactly the same as the Top of the Cathode
- No self-supporting structure
- Pillars sitting on the membrane
- No pipe grid but 4mm dia stainless steel wires will be used → 6 m long
Thank you
Deformation
Equivalent Stress
GROUNDGRID - PRELIMINARY STRUCTURAL ANALYSIS
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