Motivation

- A detector designed to visualize cosmic spark events for demonstration and educational purposes.
- It is used to measure muon mass and is also suitable for measuring the distribution of muon angles in the atmosphere, the muon magnetic moment, and more.

Advised Requirements

- High Gas Purity, ~ 99%
- High Plate Voltage, > 2.5 kV
- Long Electrical Pulse ~ μs, 5 μs
- Fast Trigger Response < 500 ns, 507 ns
- Edge Curvature Radius > 3 mm, ≈ 1 mm
- Gap Width Fluctuation < 1%, ≈ 36%

Schematic Diagram

Prototype Performance

- Vertical Assembly
- Vacuum Pump to accelerate gas circulation
- Pluggable Wire Connection

Plate: 450 mm × 230 mm × 10 mm
Box: 525 mm × 370 mm × 130 mm
4-layers Aluminum

Planned Upgrade

- Gas Path
- Gap width: 10 mm
- Horizontal Assembly Diagram
- Plate: 400 mm × 400 mm × 5 mm
- Box: 515 mm × 487 mm × 685 mm
- The total thickness of the aluminum plates must be sufficient to detect stopped and decayed muon events.

Reference