

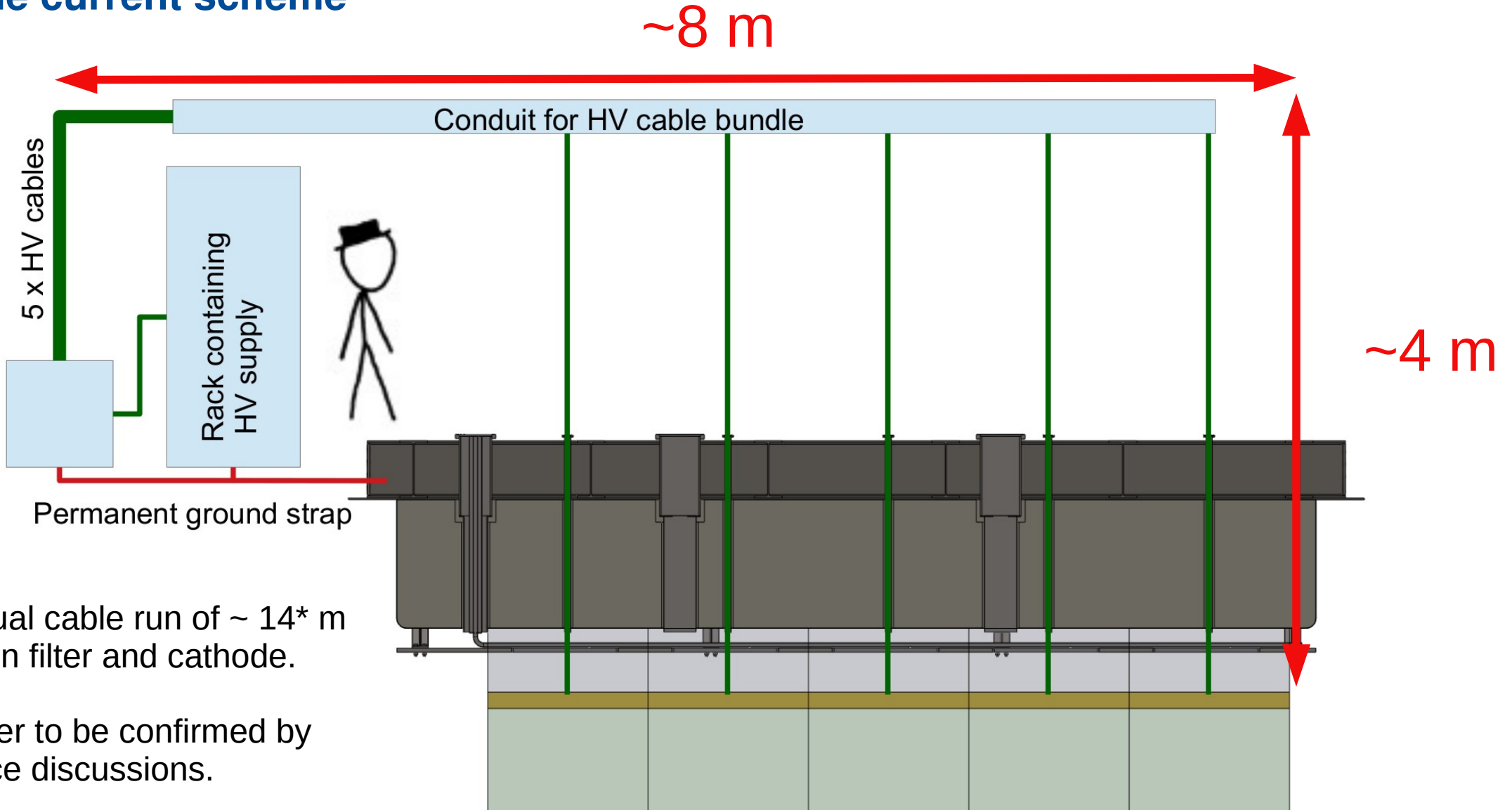


Field Structure HV Update

Weekly engineering call
October 15th 2021
James Sinclair, SLAC

Cubism - Braque's Bottle and Fishes, Paris c.1910-12

The current scheme



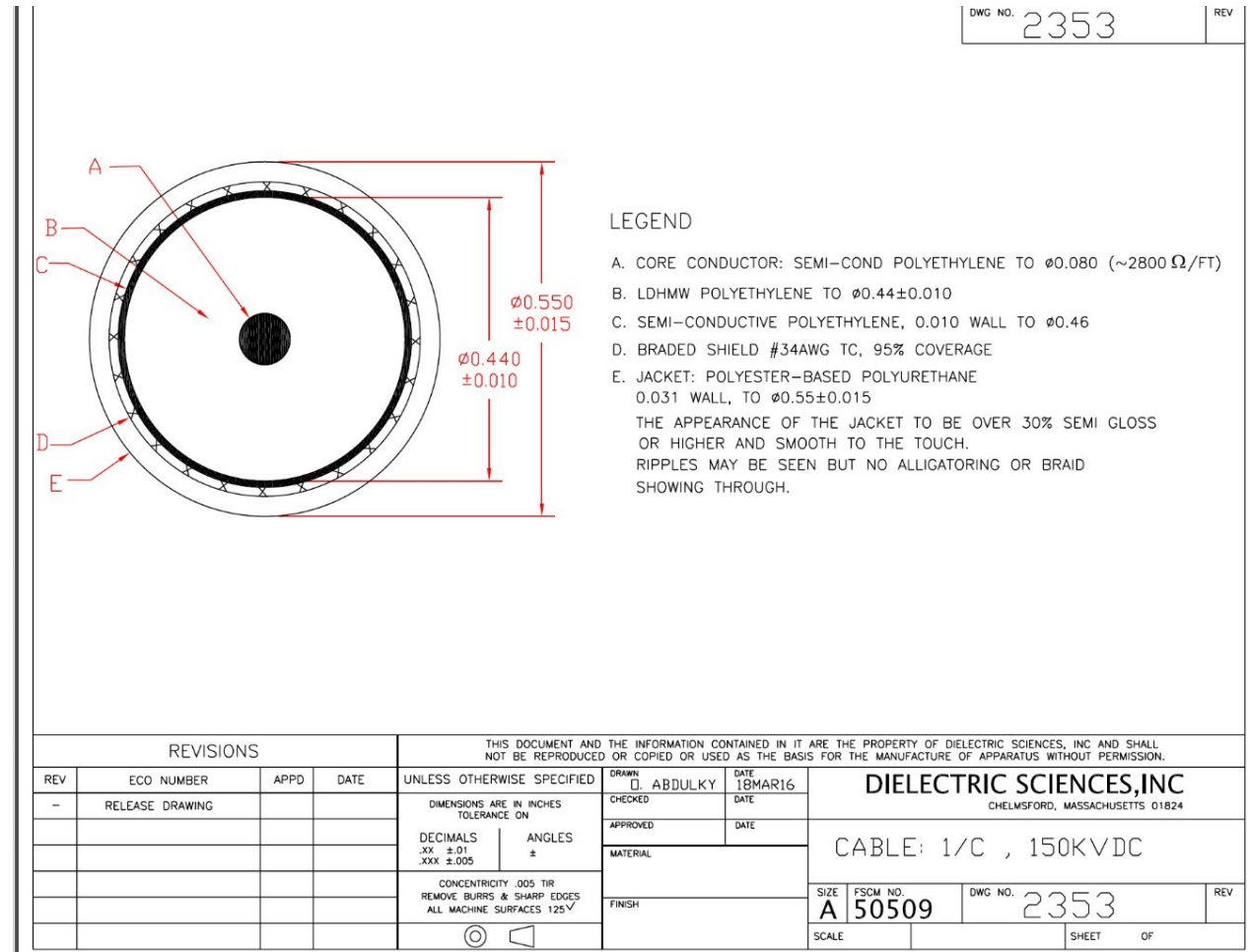
Continual cable run of ~ 14* m between filter and cathode.

*Number to be confirmed by interface discussions.

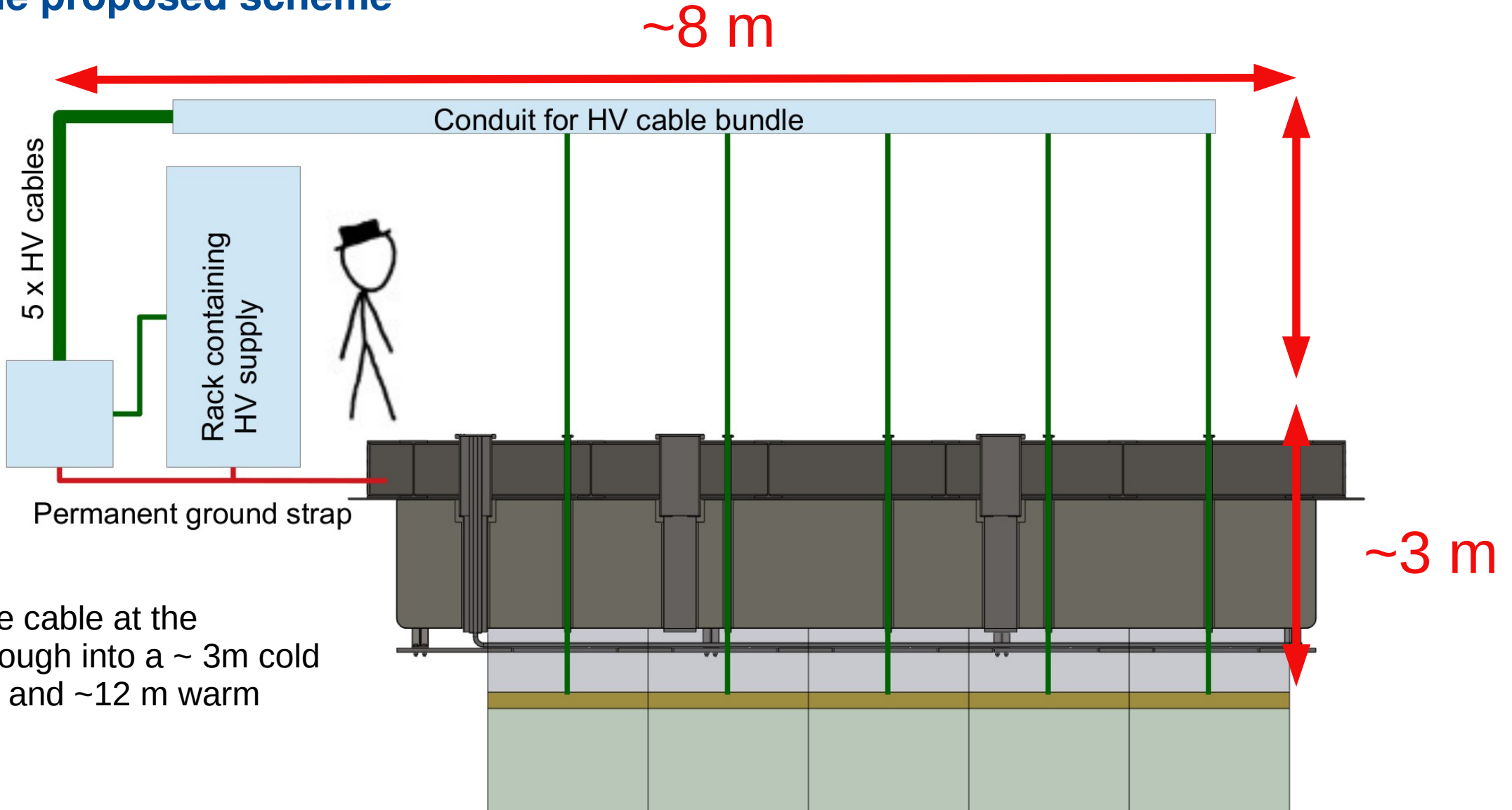
The Cable

- Produced by Dielectric Sciences, INC.
- Also found application in nEXO(arXiv1805.11142)
- Resistance: 8.4 kΩ/m
- Capacitance: 90 pF/m

SLAC ordered sufficient quantity for ND. But, not quite the same construction as previously tested



The proposed scheme



Split the cable at the feedthrough into a ~ 3m cold section and ~12 m warm section

The proposal

- Split the cable at the feedthrough.
- 1 cold internal cable connecting between cathode and feedthrough “cross”. With a standard HV connector at the feed through.
- 1 warm cable connecting filter to feed through.

Why: Simplifies construction, assembly, and testing. Reduces consequence of any damage to full ~15 m cable.

Is this a bad idea?

Can the warm cable be metal? (Current method in SLAC HV test stand)