*Mt. Chive*

# High Voltage Divider Board

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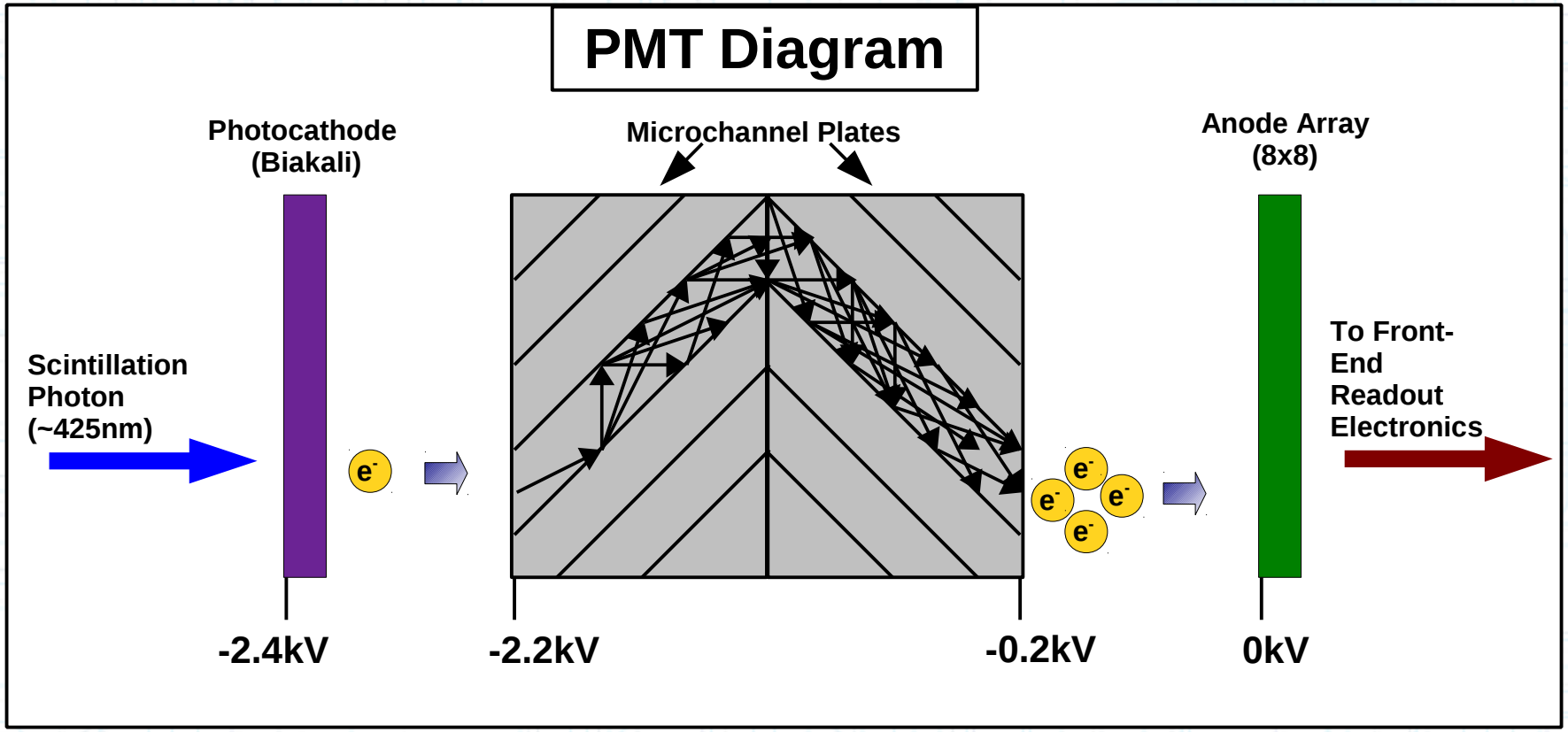
Joshua Murillo

# Motivation

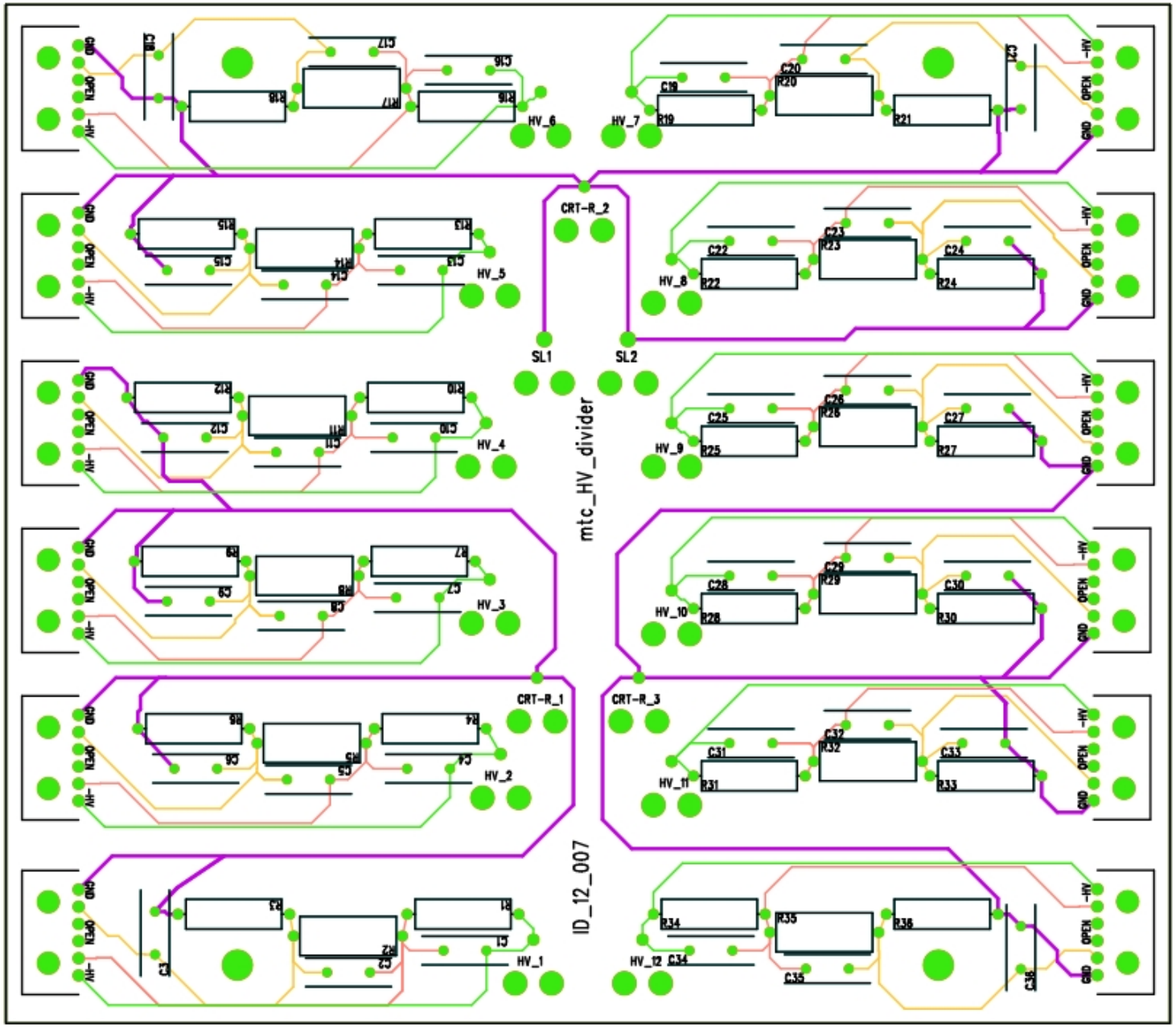
- Provide high voltage for microchannel plate photomultiplier tubes (MCP-PMTs) for the mini-Time Cube (mTC)



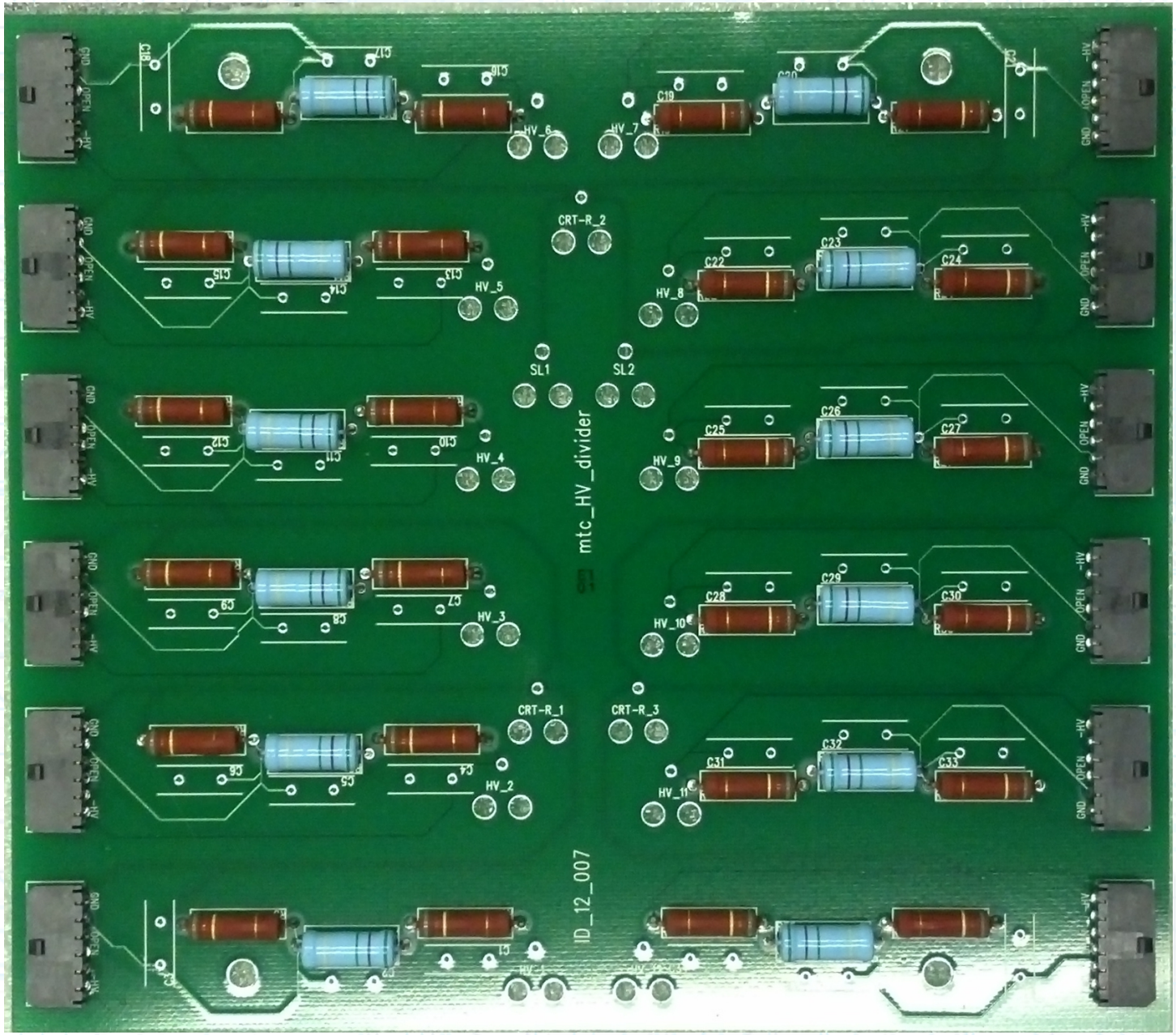
# Specifications

- 24 channels of high voltage (~2.4kV)
  - Realized via two 12-channel PCBs
- Printed circuit board (PCB) will divide high voltage; supplying 4 voltages to each PMT (Cathode, MCP-IN, MCP-OUT, Anode)
- Board and components need to withstand high voltage. Necessitates:
  - Large components
  - Isolating PCB traces, vias and through holes as much as possible
  - Overall, **large** board size

# Layout


mtc_HV_divider
ID_12_007
CRT-R_1
CRT-R_2
CRT-R_3
SL1
SL2
HV_1
HV_2
HV_3
HV_4
HV_5
HV_6
HV_7
HV_8
HV_9
HV_10
HV_11
HV_12
-HV
OPEN
GND

# Printed Circuit Board



# Problems / Solutions

- Test divider circuits with low voltage
  - ✔ All channels divide voltage correctly
- Using W-Ie-Ne-R (Mpod) high voltage supply
  - ✗ Software provided controls low voltage, **not** high voltage.
  - ✔ Additional software needs to be developed.
- Thermal Dissipation
  - ✗ 12W per HV board
  - ✔ Common issue for mTC electronics. Fans to circulate air? input and output already built into detector enclosure.

# Thank You