

# **E690 Chamber Progress**

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Fermilab  
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## Recent History...

Built in the early 1980's for BNL E766.

Last used in January, 1992, for FNAL E690.

Stored in Lab G, then PC4, much of the time with N<sub>2</sub> gas flowing.

Moved from storage to Lab 6, spring of 2002.

With N<sub>2</sub> gas, tested at high voltage and found to hold voltage.

Capacitance test indicates possible problems in chambers.

Full cosmic ray test of one of the 4 chambers, using Ar+C<sub>4</sub>H<sub>10</sub>+methylal.

One chamber had discharge problems at high voltage.

One chamber was "unstable" at high voltage.

The large chamber had a number of problems going to high voltage.

Decide to disassemble problem chambers.

Required "transfer frames" were lost in the moves, reconstructed.

Disassembled first chamber Nov. 2, 2002.

Transfer frames?...

The tension per wire is 100 g for the cathode, 50 g for the anode.

The cathode wire pitch is 24 per inch (8 per inch for the anode wires).

For the “small” chambers  $70 \text{ inches} * 24 * 100 \text{ g} = 168 \text{ kg}$  per cathode plane

There are 5 cathode planes.

The G-10 planes on which the wires are glued were not designed to support the wire tension independent of the aluminum support structures. To remove the wire planes, a “transfer frame” was designed to allow the G-10 planes to be transferred off of the chamber and onto a structure which could support the wire tension.

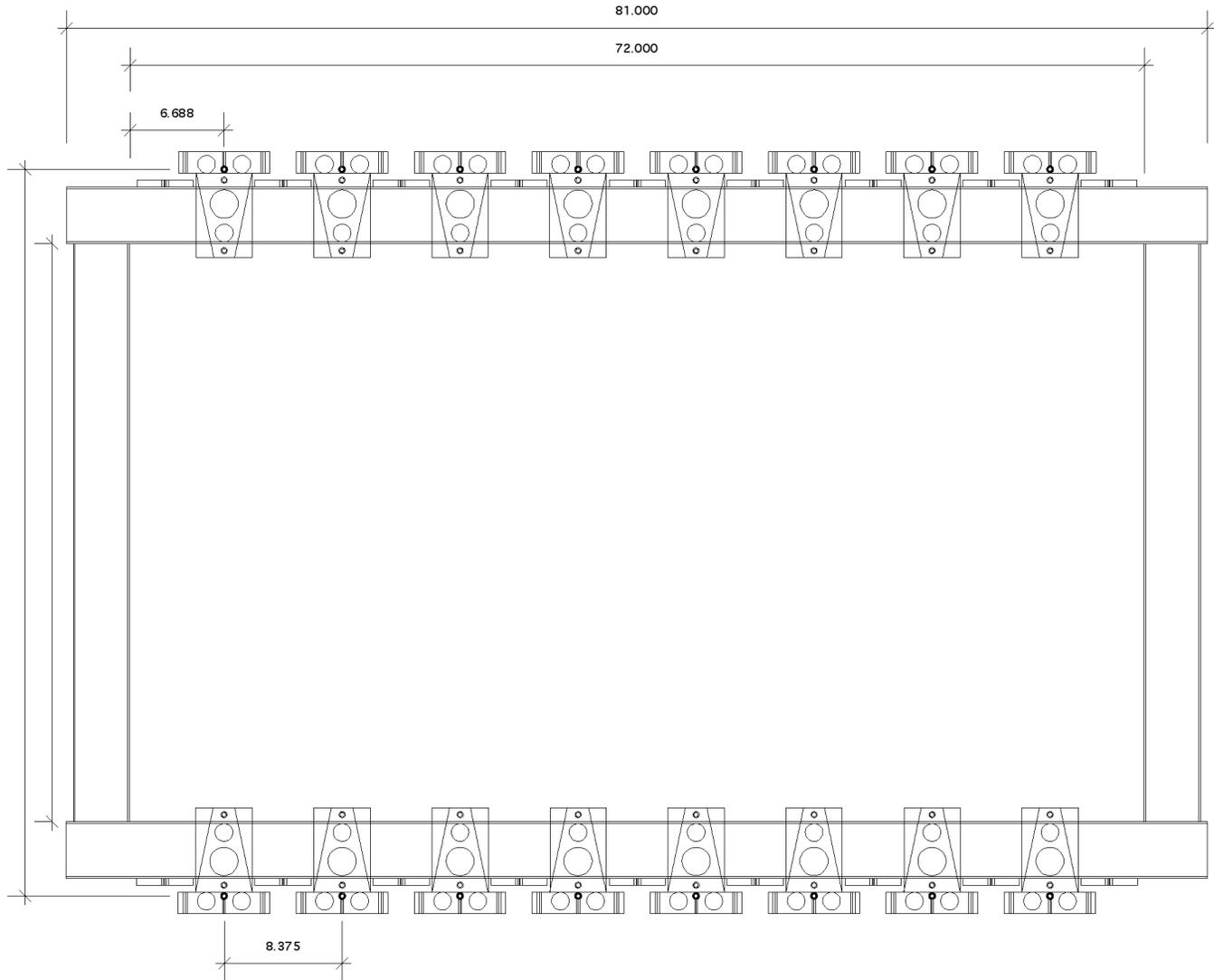


E690 Chamber 6 (E907 Chamber 1) disassembled in Lab G

Last sighting of large transfer frame

Proceed by finding “blueprints” of transfer frames and fabricate new frames.





E690 Chamber F transfer frame  
E.P.Hartouni  
June 5, 2002

Transfer frame assembled in Lab 6



Transfer frame mated onto chamber pins





Each plane is transferred onto the pins, and secured in place (using masking tape). The transfer frame can be removed, with the chamber frames and stashed elsewhere...

...chamber frames  
leaning against table in  
Lab 6





...access to each plane is possible...

We measured the wire tensions in the cathode and anode planes:

Cathodes consistently  $100 \pm 10$  g

Anodes 50 g

Cleaned out the junk in the chambers (probably introduced some more junk).

Getting ready to close this chamber, gas it, put HV on it and try it out in the cosmic ray test stand.

Other chambers will be opened and inspected.