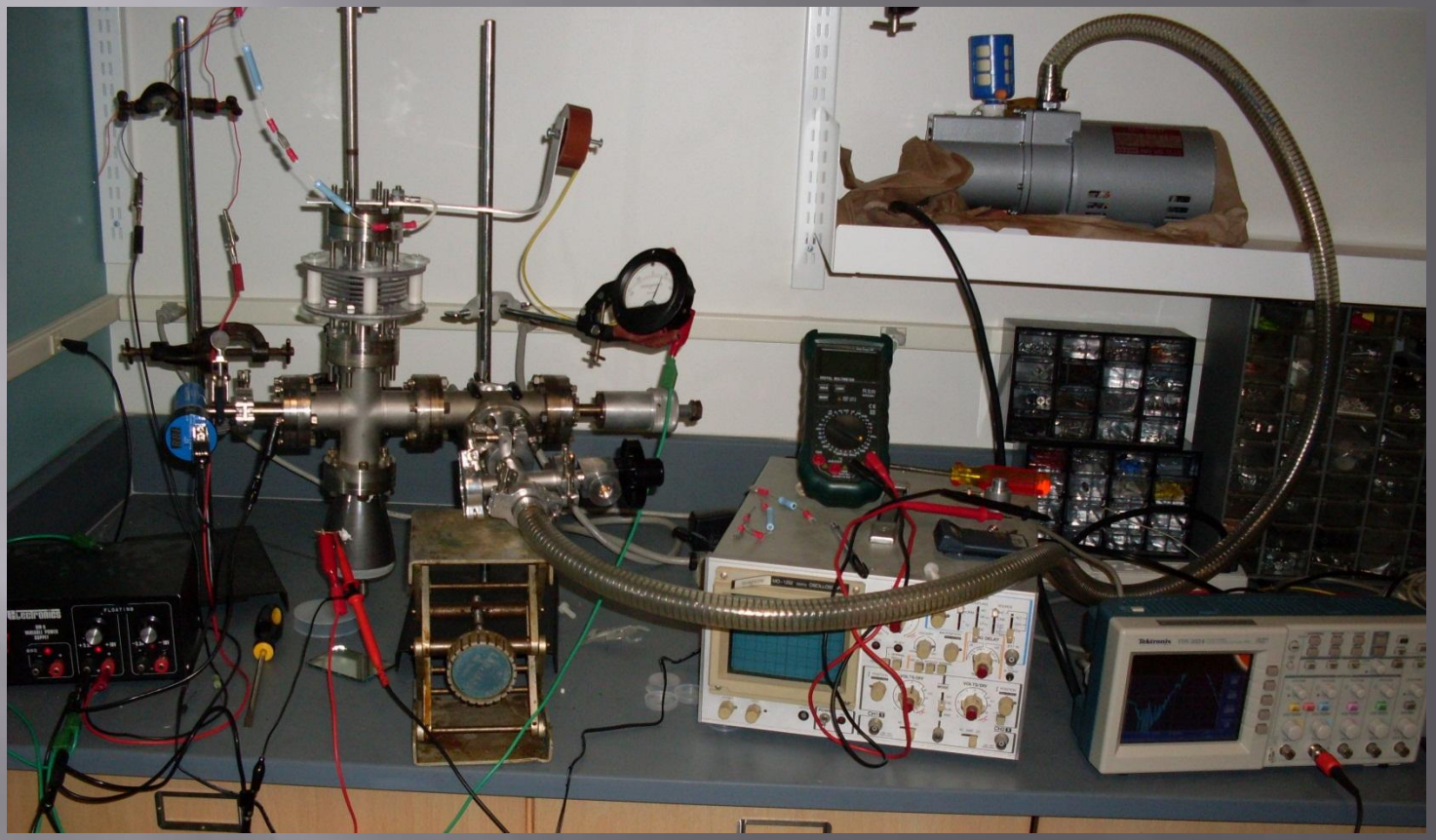
MULTIPLATE CHAMBER (MPC)



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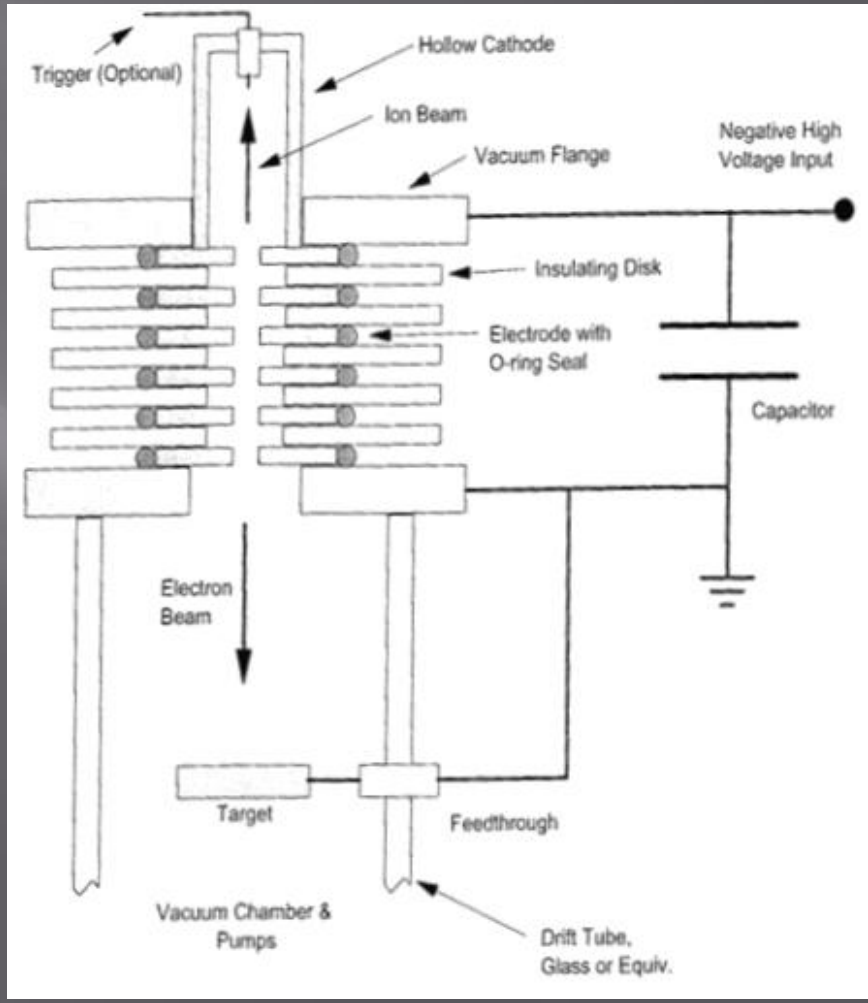
What is an MPC?

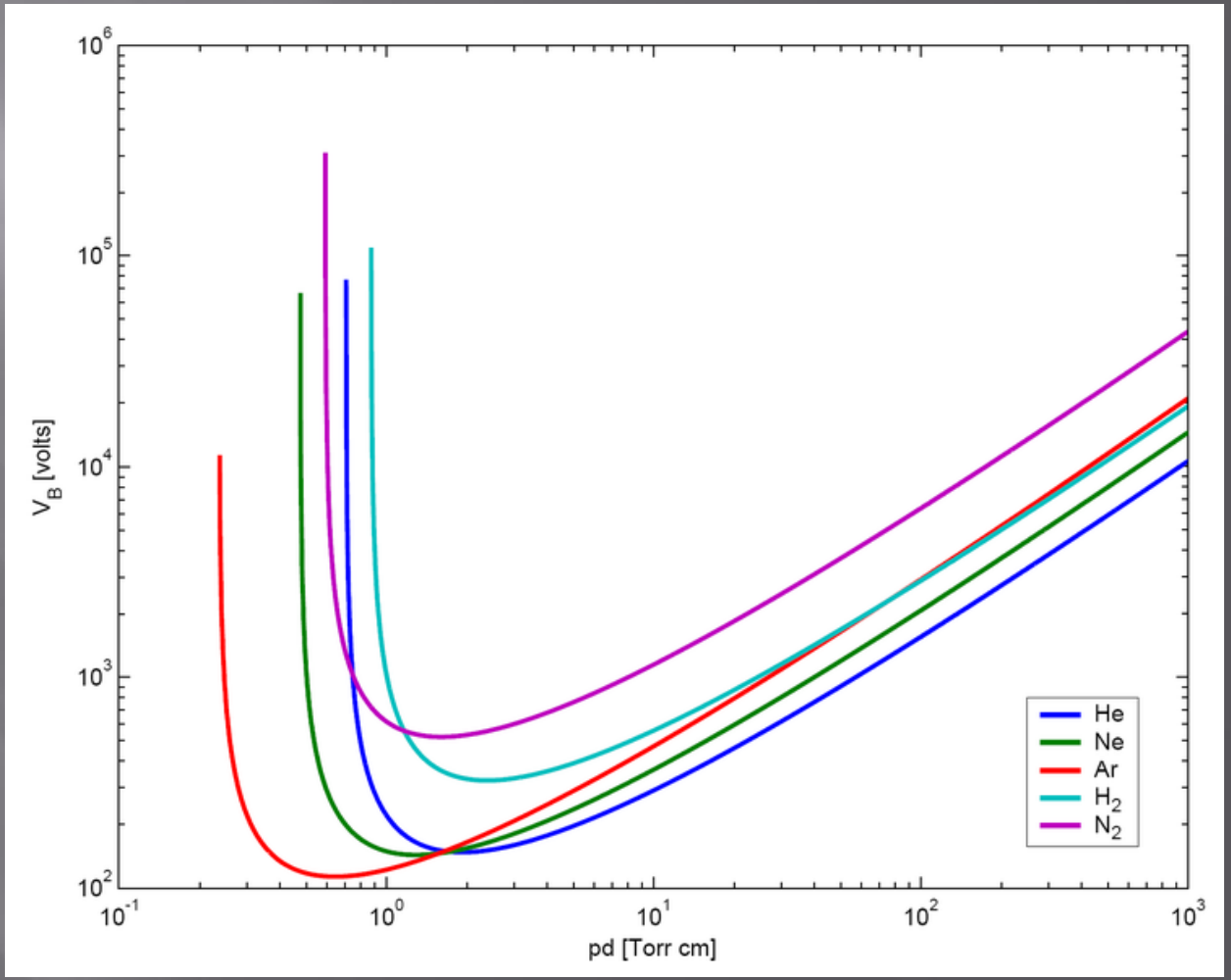
- J. Christiansen and C. Schultheiss in 1979
- High energy ion beams for triggering thermo-nuclear fusion
- High Current and Voltage electron/ion beam source



Hansen, Steve. The MPC Electron and Ion Beam Source.

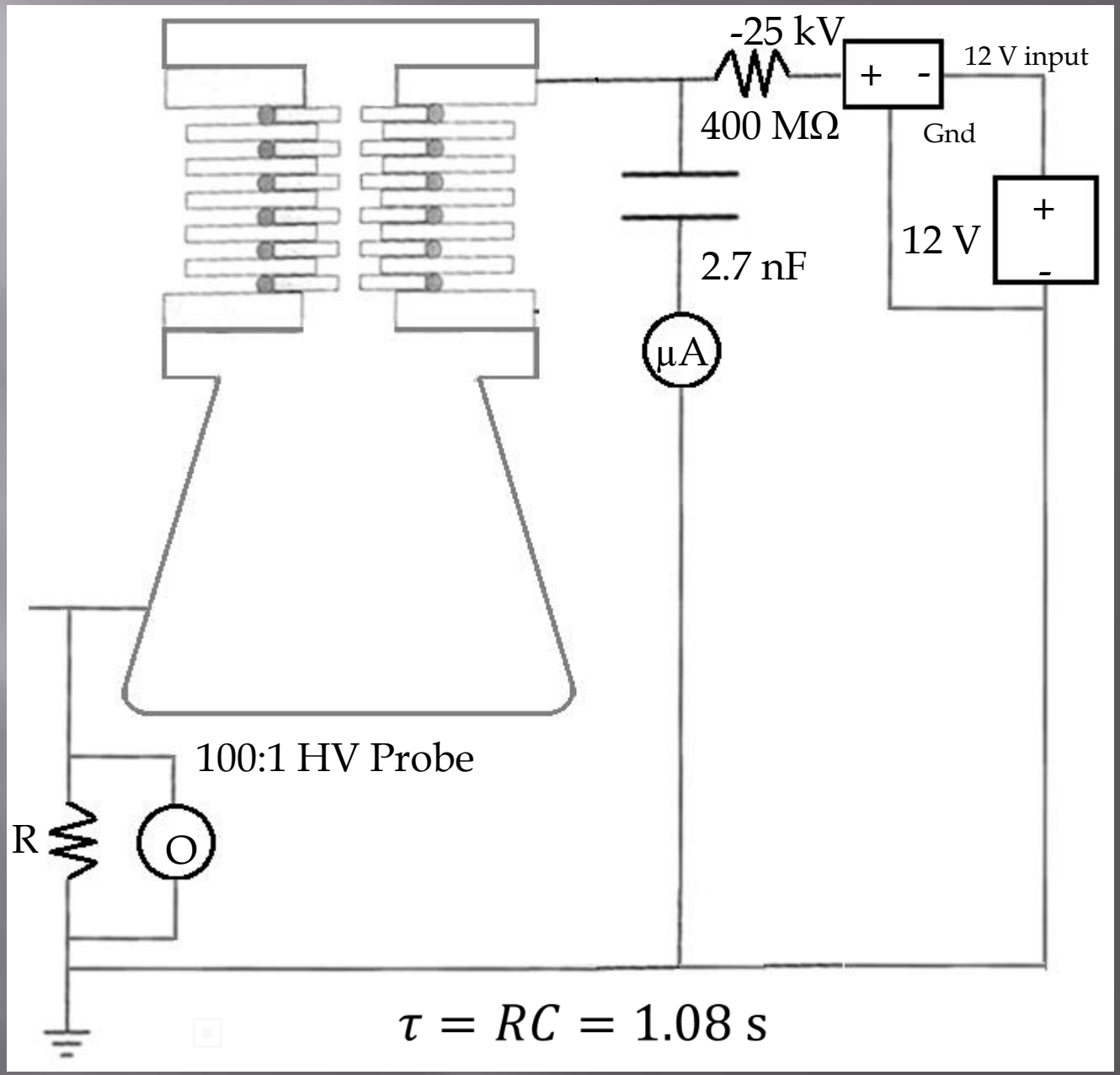
Paschen's Law and Curve

$$V = \frac{apd}{\ln(pd) + b}$$

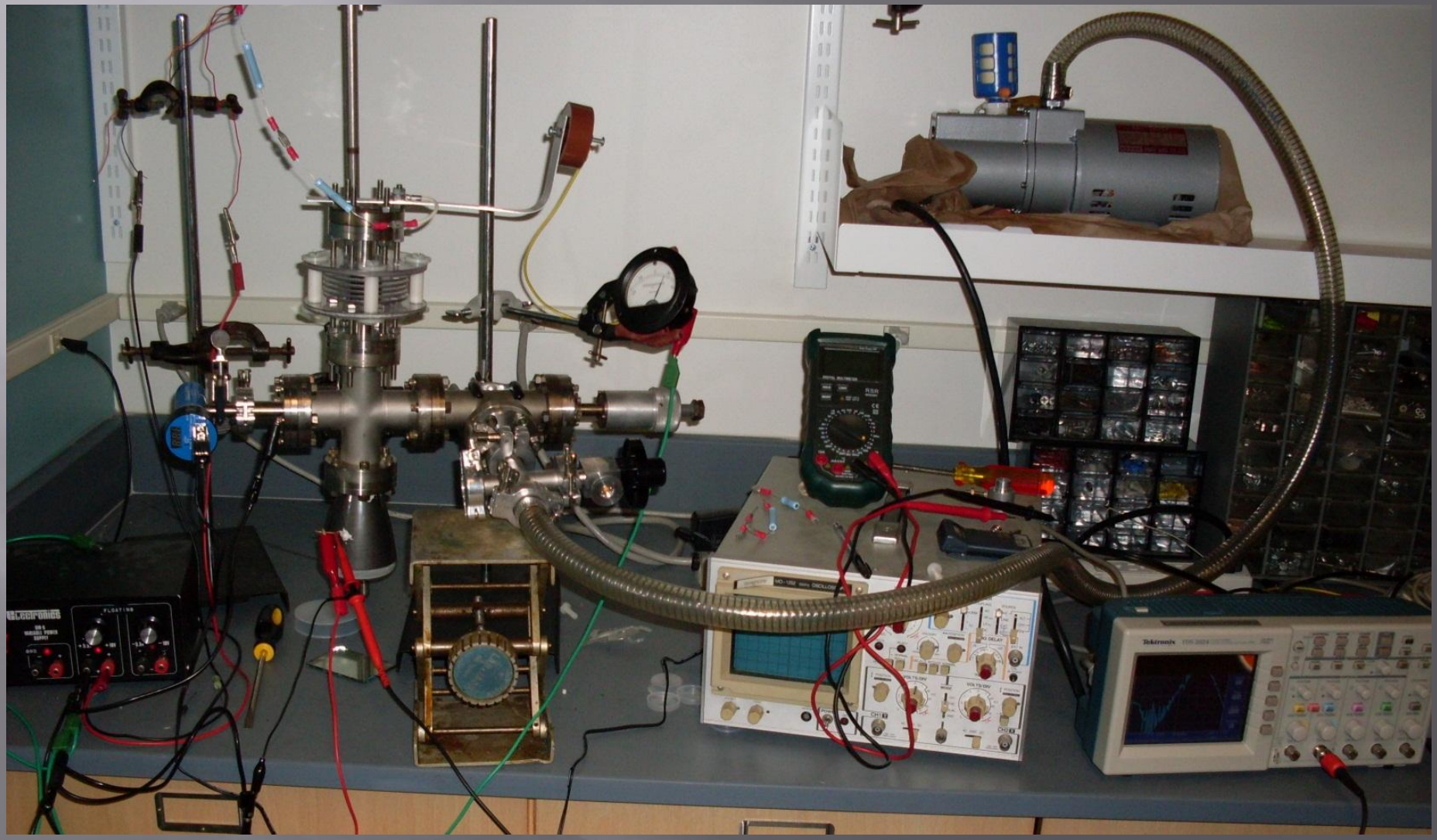


http://en.wikipedia.org/wiki/File:Paschen_Curves.PNG

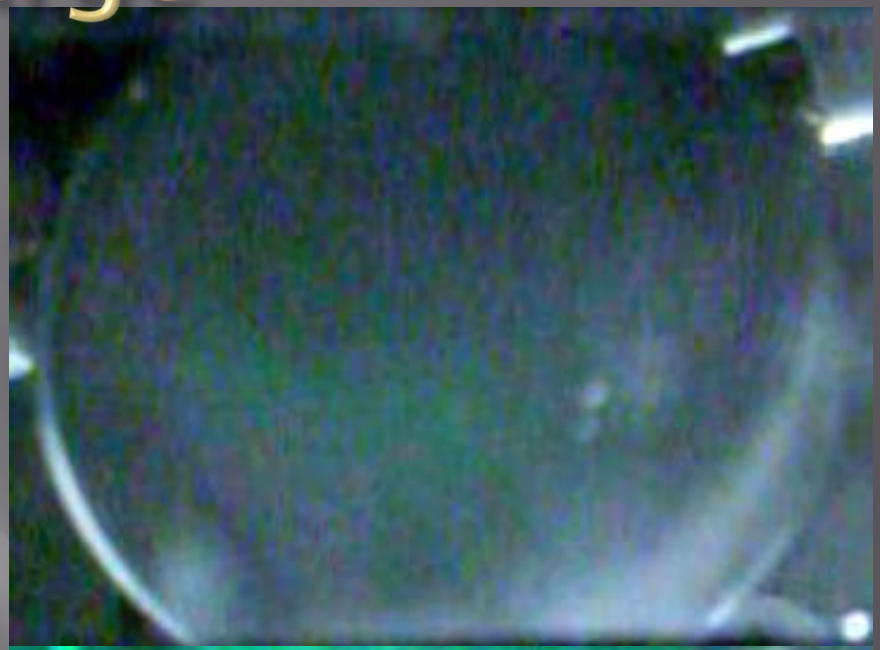
Electrical Circuit

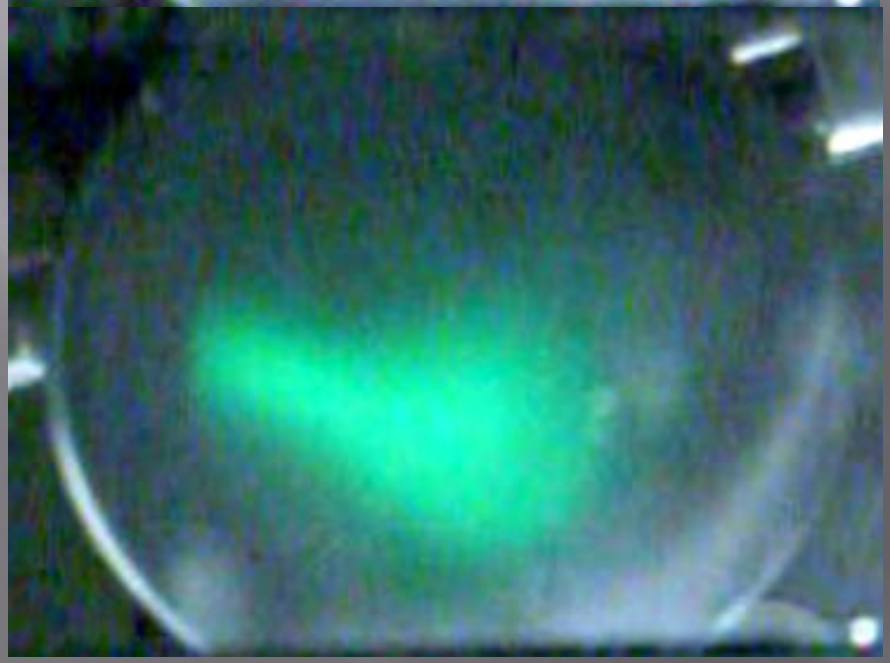


Houghton's MPC

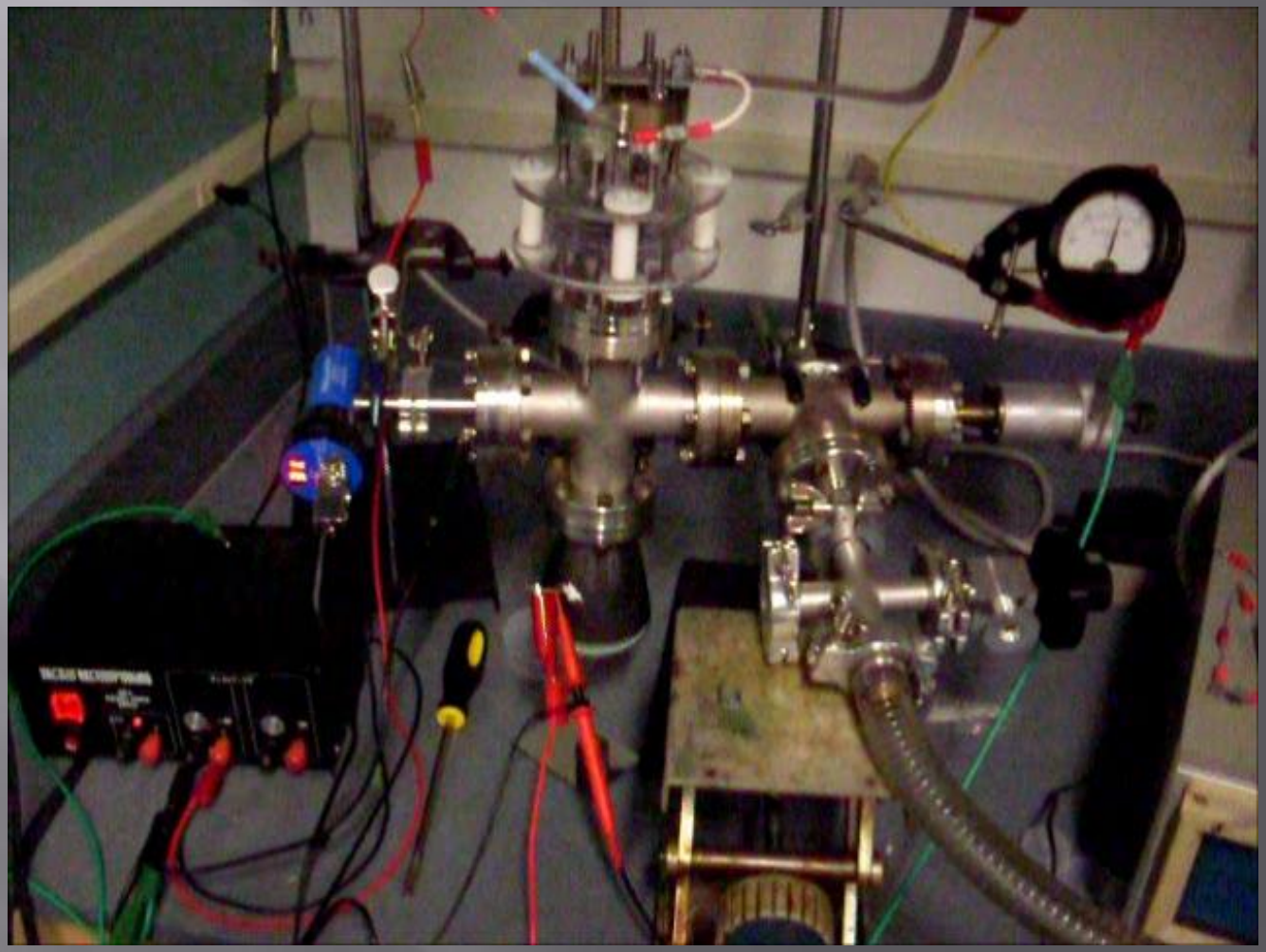


Discharge

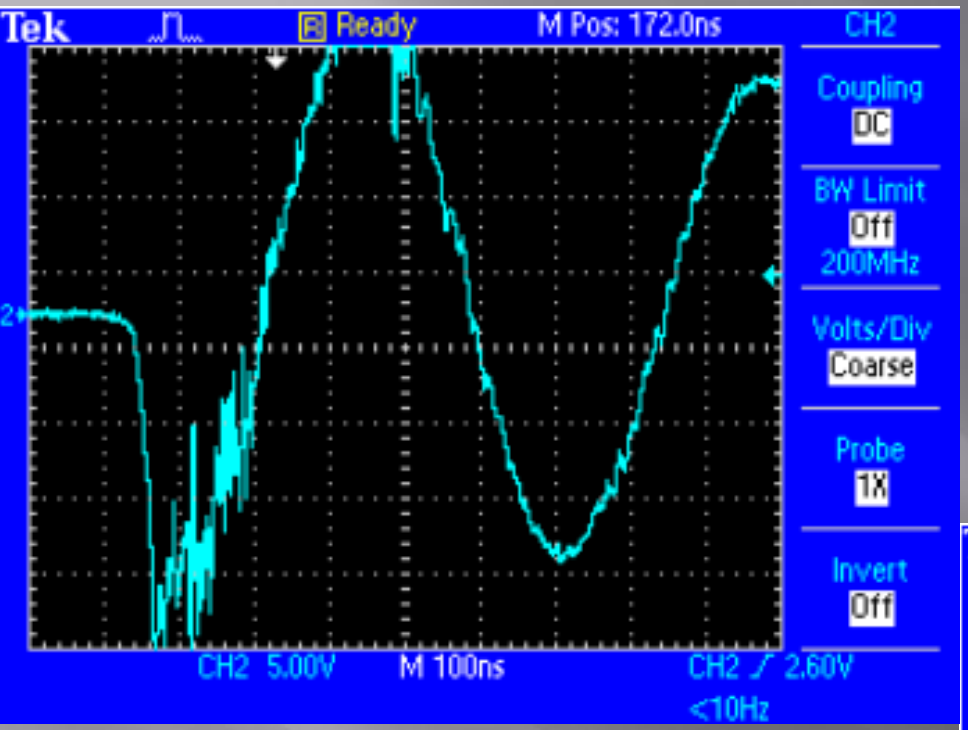


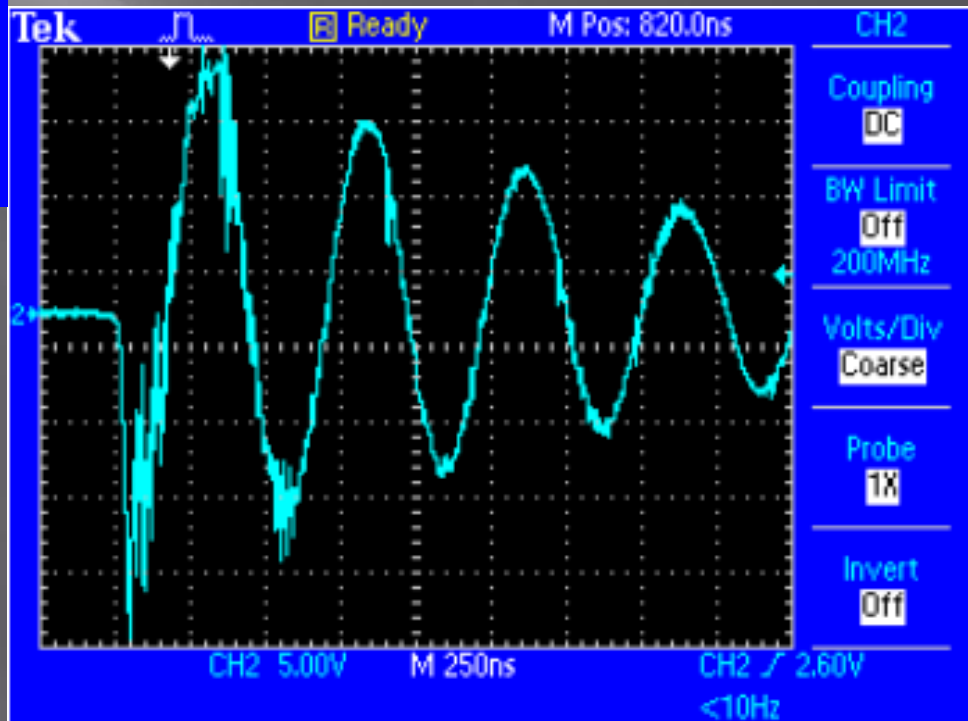


Operation



Initial Results





Moving Forward

- Limit inductance
- Confirm voltage measurements
- Limit effect discharges have on pressure gauge
- Center the beam spot
- Investigate beam geometry using linear feed through
- Insert target into MPC to create x-rays

Acknowledgements

- S. Hansen, The Multiplate Chamber Electron and Ion Beam Source
- J. Christiansens, C. Schultheiss, Production of high current particle beams by low pressure spark discharges, Z. Phys. A, **290**, 35 41 (1979)
- E. Boggasch, M.J, Second International Conference on Dense Z-Pinches, Laguna Beach, CA, 1989