

# Comparison of Cylindrical and Spherical Geometry in a New Inertial Electrostatic Confinement Device

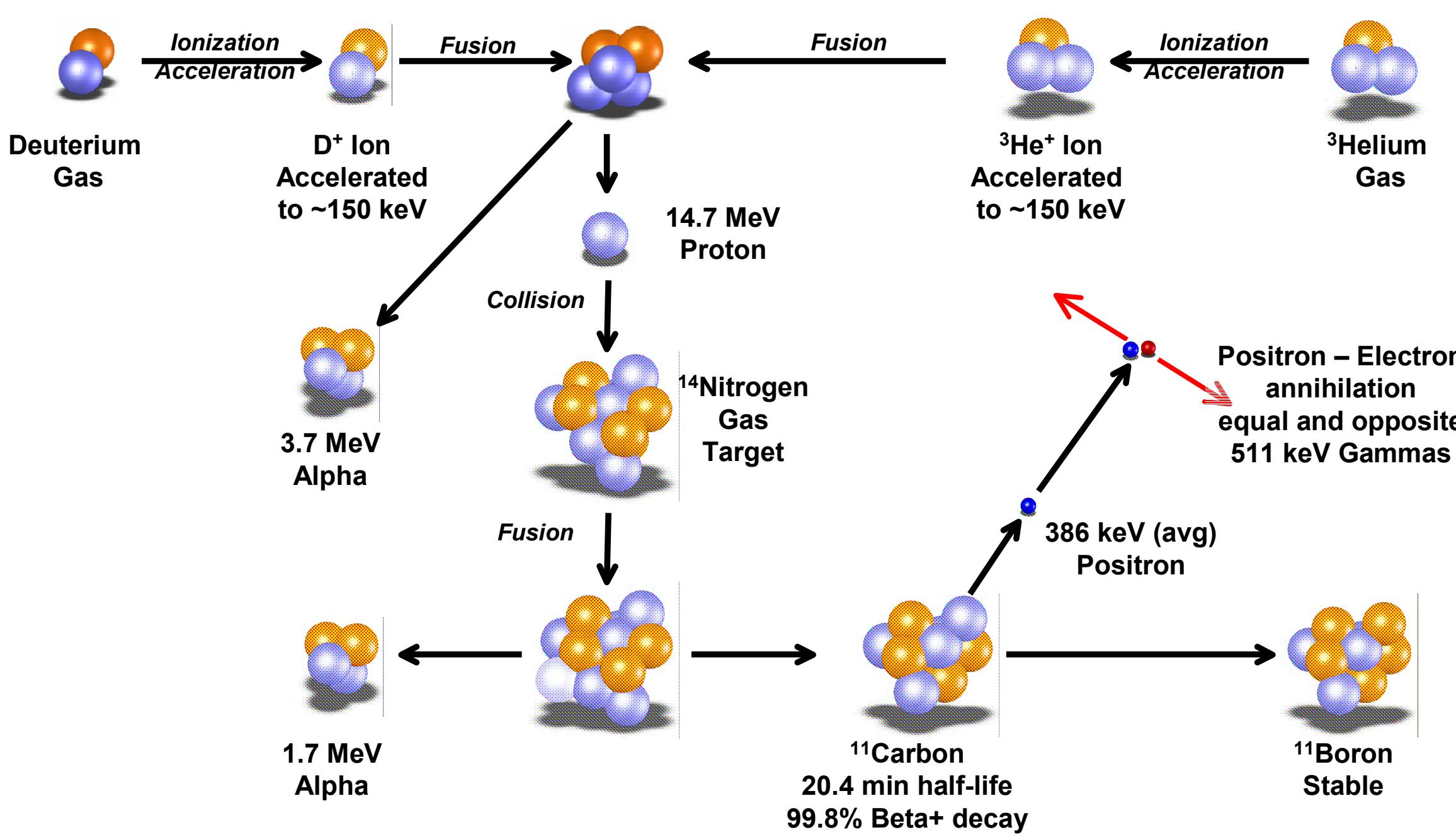
Brian J. Egle and the UW IEC Team

Fusion Technology Institute – University of Wisconsin

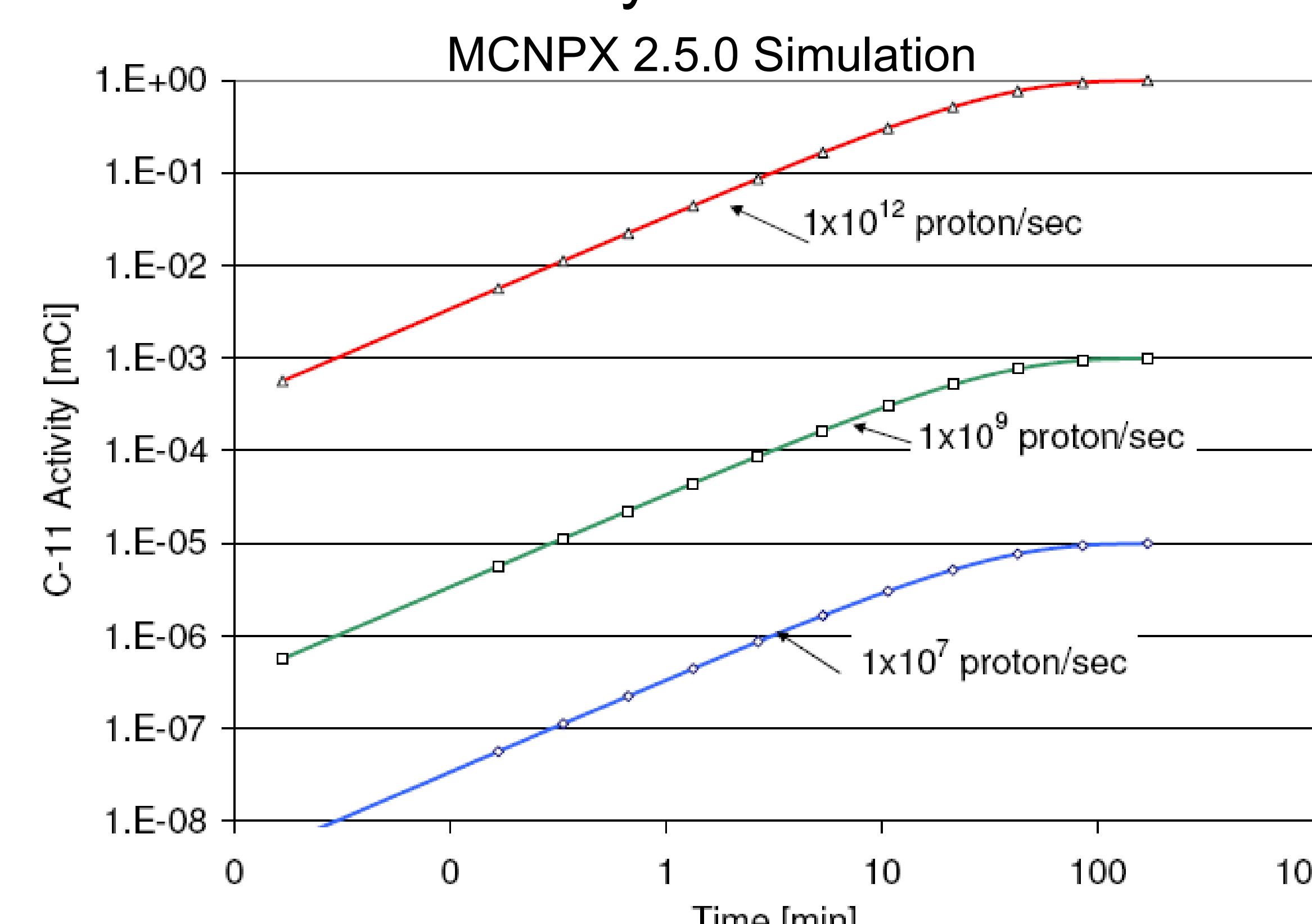
## Objectives:

- Commission a new IEC device
- Investigate cathode and anode geometries
- Increase D-<sup>3</sup>He fusion rates
- Produce radiopharmaceuticals in an IEC device

## Application: PET Isotope Production

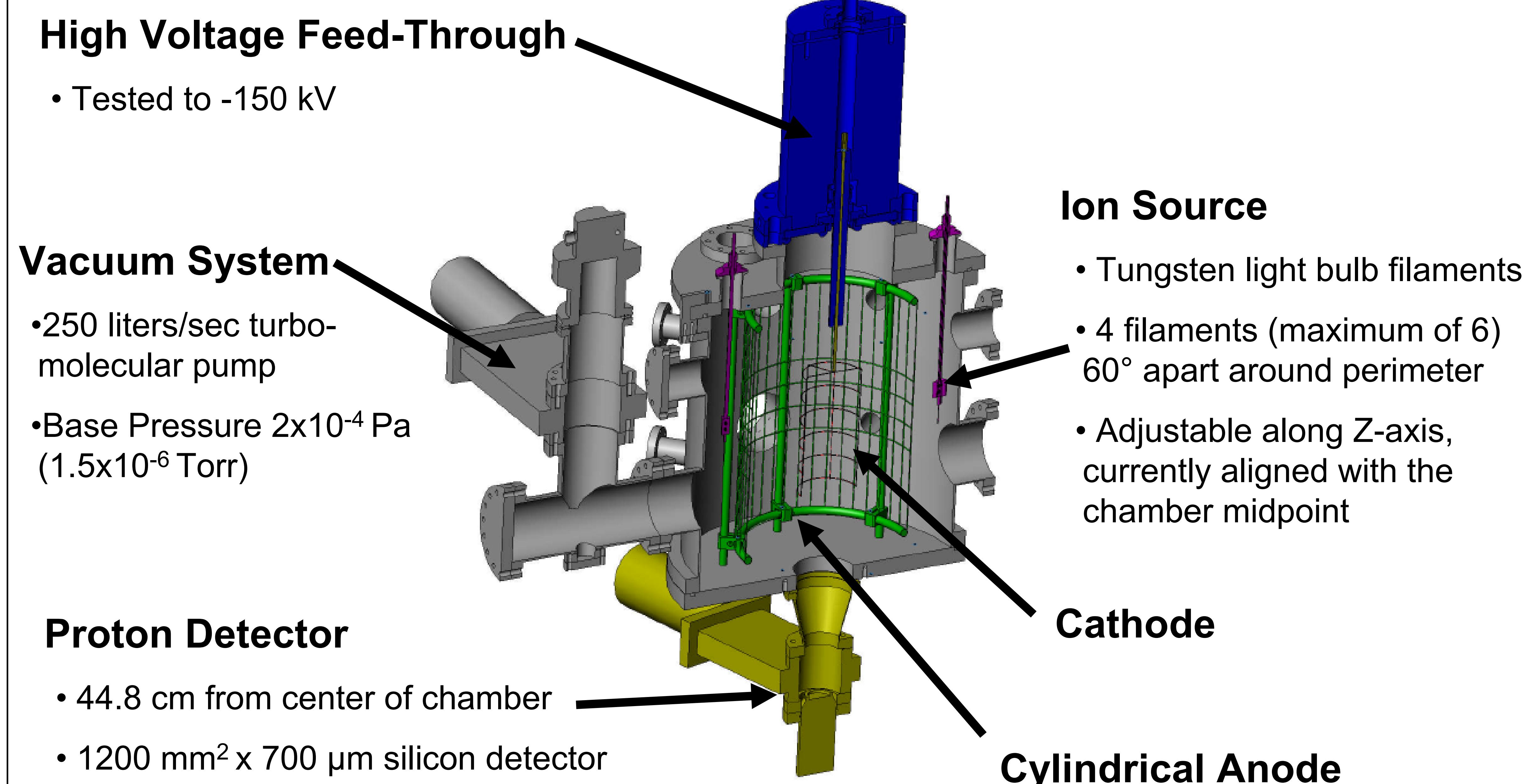


Predicted <sup>11</sup>C Activity at Different Fusion Rates



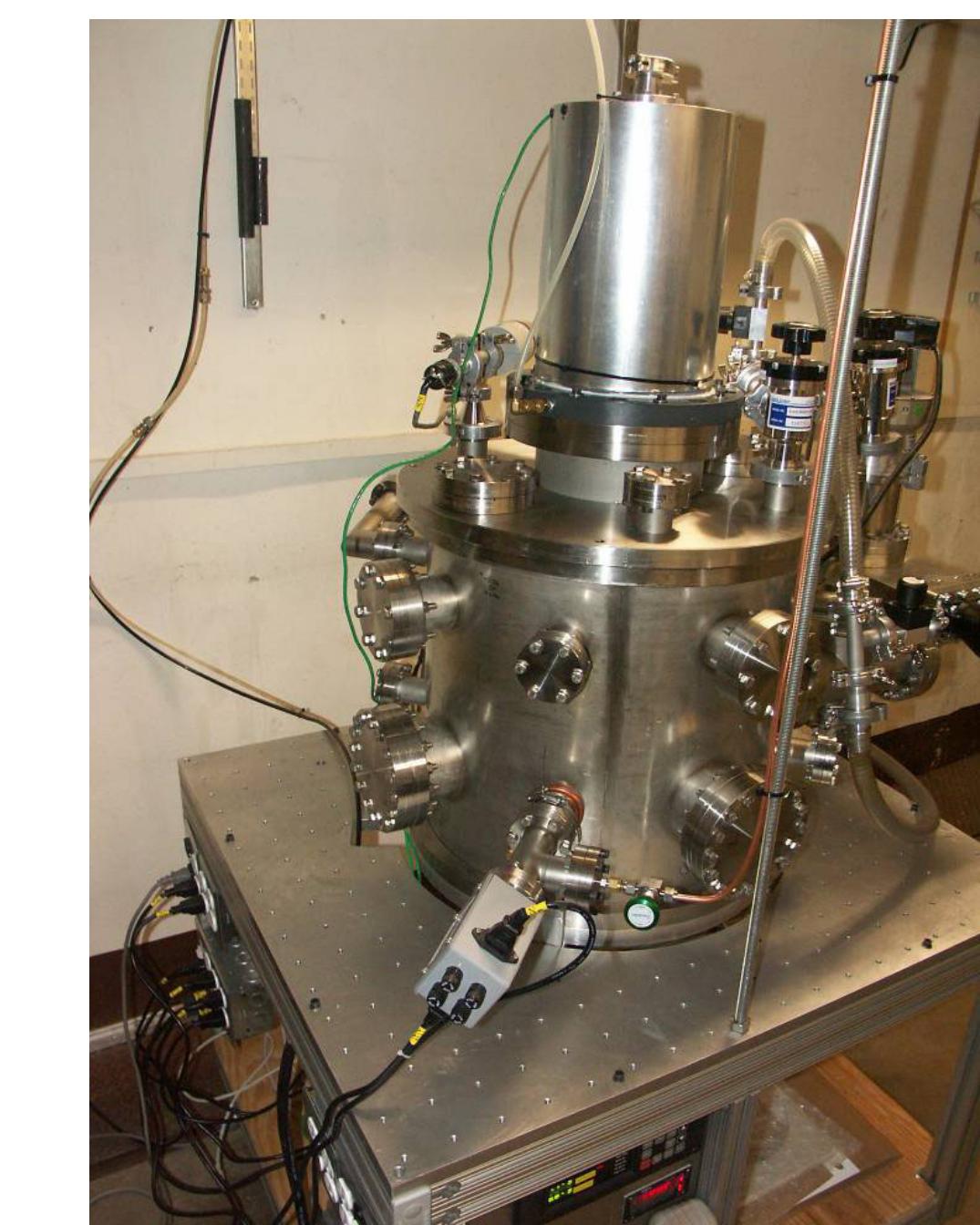
## New Inertial Electrostatic Confinement Device

### <sup>3</sup>HeCTRE: <sup>3</sup>Helium Cylindrical Transmutation Reactor



## Milestones:

- Began construction July 2005
- First D-D reactions April 2006
- Best neutron rate **2.7x10<sup>7</sup> neutrons/sec** at 145 kV, 35 mA, and 0.3 Pa (2 mTorr)
- First D-<sup>3</sup>He reactions Oct. 18, 2006
- Best proton rate **2.0x10<sup>7</sup> protons/sec** at 130 kV, 30 mA and 0.3 Pa (2 mTorr)



## Fusion Rate Comparison: Anode and Cathode Geometry

