Pulsed Neutron Production at the UW Advanced Fusion Fuels Facility

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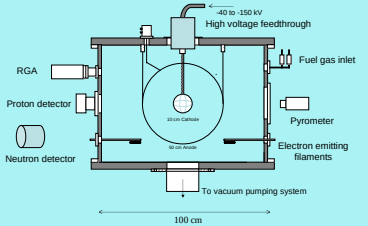
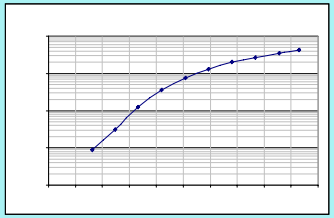
http://fti.neep.wisc.edu/iec

Experimental Facility

Cylindrical Aluminum IEC Chamber

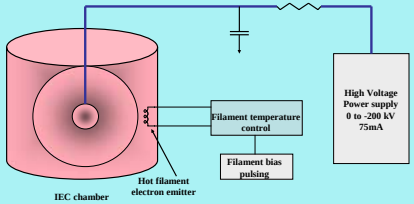


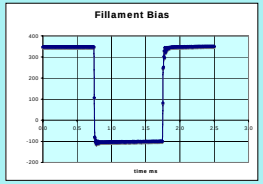
Steady State Fusion

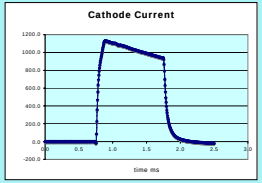


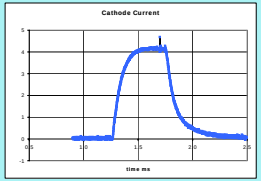
IEC Neutron Pulsing Method

Ion source pulsing produces neutron pulses



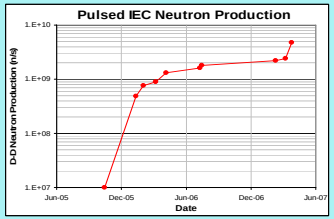


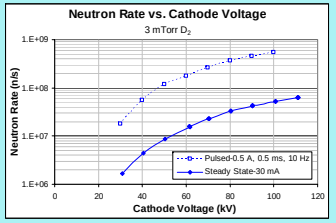


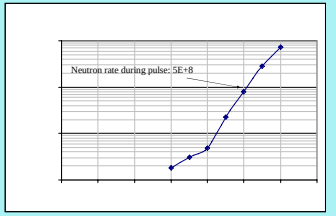


Pulsing Data

Max Cathode Voltage: 120 kV
Max Deuterium Pulse Current: 6 Amps
Max D-D Neutron Rate: 4.7x109 n/s
@ 96 kV, 5 A, 0.33 Pa, 110ms pulse width, 5 Hz

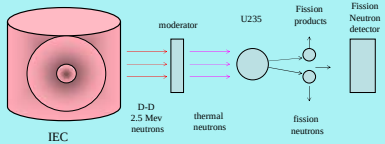




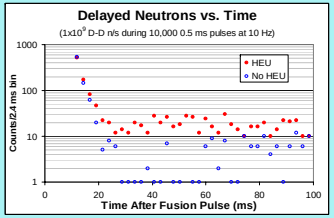


HEU activation and detection

D-D fusion neutrons from the IEC are used to cause highly enriched uranium to create detectable fission neutrons



10 grams of highly enriched uranium



Future Work