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(54) **NEUTRON TUBES**

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(57) **ABSTRACT**

A neutron tube or generator is based on a RF driven plasma ion source having a quartz or other chamber surrounded by an external RF antenna. A deuterium or mixed deuterium/tritium (or even just a tritium) plasma is generated in the chamber and D or D/T (or T) ions are extracted from the plasma. A neutron generating target is positioned so that the ion beam is incident thereon and loads the target. Incident ions cause D-D or D-T (or T-T) reactions which generate neutrons. Various embodiments differ primarily in size of the chamber and position and shape of the neutron generating target. Some neutron generators are small enough for implantation in the body. The target may be at the end of a catheter-like drift tube. The target may have a tapered or conical surface to increase target surface area.

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