

Abstract Submitted
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Neutron production using deuterated palladium wires ERIK MC-KEE, TIM DARLING, BEN HAMMEL, NTF, NTF COLLABORATION — The Zebra 1-MA/100ns rise time pulse power generator (HDZP-II) was initially designed to pinch single extruded wires of frozen deuterium in an effort to achieve fusion ignition [1], however solid thin-wire loads are now the main target. In general, the load for production of neutrons is a 4-wire, $20\mu\text{m}$ palladium wire in X-pinch configuration treated with deuterium gas. The generation of neutrons on Zebra are not from realization of Lawson's criterion [2], but rather are produced through beam-like collisions in MHD sausage-like instabilities with large and local electric fields. This project builds on the wire-array knowledge accumulated at NTF and we report on a reproducible, pulsed neutron source with yields exceeding 10^9 .

[1] J. S. Schlacter, "Solid D2 fiber experiments on HDZP-II." *Plasma Phys. Control Fusion* 32:1073, 1990.

[2] Anderson, O. A., Baker, W. R., Colgate, S. A., Ise, J., Pyle, R. V., 1958, "Neutron Production in Linear Deuterium Pinches," *Phys. Rev.* 45, pp 1375-1387

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