

Abstract Submitted
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SABR fusion-fission hybrid transmutation reactor design concept

WESTON STACEY, Georgia Tech — A conceptual design has been developed for a sub-critical advanced burner reactor (SABR) consisting of i) a sodium cooled fast reactor fueled with the transuranics (TRU) from spent nuclear fuel, and ii) a D-T tokamak fusion neutron source based on ITER physics and technology. Subcritical operation enables more efficient transmutation fuel cycles in TRU fueled reactors (without compromising safety), which may be essential for significant reduction in high-level waste repository requirements. ITER will serve as the prototype for the fusion neutron source, which means SABRs could be implemented to help close the nuclear fuel cycle during the 2nd quarter of the century.

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