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Reviving Nuclear Fusion Reaction Cycles in Solido

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We present a new revision of nuclear fusion reaction cycles whereby a solid room temperature lithium-6 deuteride (${}^6\text{LiD}$) is burnt with neutrons beams. New calculations of the time evolution of a network of differential equations for the abundances of various nuclear species are presented. Data on nuclear cross-sections and non-thermal reaction rates are used to forecast the full time evolution of the most relevant thermonuclear reactions. Two cycles are considered: the Jetter $n+{}^6\text{Li}$ and Post cycles $p+{}^6\text{Li}$. According to our calculations there are great expectations for energy extraction in devices not based on plasma confinement, but rather on controlled nuclear burning into final products (mainly alpha particles).

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