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BEAM-DRIVEN TRANSMUTATION TECHNOLOGY

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Abstract

As concerns grow about the ultimate disposition of the large amount of waste produced by the nuclear weapons program in the U. S. and Russia and world-wide commercial nuclear power, the primary approach of permanent geologic storage is making little headway. Attention to means for destruction of these wastes by neutron transmutation is therefore growing. While reactors offer some potential for dealing with this problem, there are problems with both safety and completeness of this approach.

Accelerator-driven systems appear to offer improved safety in terms of subcriticality, capability for complete destruction of long lived higher actinide and fission product, and a more proliferation-resistant fuel cycle. The fundamental advantages of accelerator-driven systems over reactors in terms of neutron economy will be described. The salient features of the technology will be presented such as the basis for the choice of liquid fuel, the approach to front- and back-end separations, and a comparison of linac and cyclotron accelerator effectiveness.

The present status of this technology in the U. S. and world-wide is described. A plan for development and deployment of the technology is presented.

(The full text has not been supplied.)