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Light ion beams for energy production in accelerator driven systems

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A comparative study of the energy efficiency of proton beams with an energy from 0.5 GeV to 4 GeV and light ion beams (7Li, 9Be, 11B, and 12C) with energies from 0.25 AGeV to 1 AGeV in natural and enriched quasi-infinite U target is presented. The numerical results on the particle transport and interaction are obtained using the code Geant4. The following target optimization issues are addressed: the beam window dimensions, the coolant, the possibility to use a core from low Z materials. The best solution for ADS from the point of view of the energy gain and miniaturization is obtained for 7Li or 9Be beam with an energy of 0.35 –0.4 AGeV and a target with Be core.

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3. Baldin A. A., Berlev A. I., Paraipan M., Tyutyunikov S. I., Physics of Particles and Nuclei Letters №1_173

Primary author: Dr PARAIPAN, Mihaela (Institute of Space Science Bucharest-Magurele Romania, Joint Institute for Nuclear Research Dubna Russia)

Co-authors: Prof. BALDIN, Anton (Joint Institute for Nuclear Research Dubna Russia, Institute for Advanced Studies "OMEGA", Dubna, Russia); Mrs BALDINA, Elina (Joint Institute for Nuclear Research Dubna Russia, Institute for Advanced Studies "OMEGA", Dubna, Russia); Prof. TYUTYUNNIKOV, Serguey (Joint Institute for Nuclear Research Dubna Russia)

Presenter: Dr PARAIPAN, Mihaela (Institute of Space Science Bucharest-Magurele Romania, Joint Institute for Nuclear Research Dubna Russia)

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