

ADS for Energy Production and ^{233}U breeding in HEU-Thorium Oxide system

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For power production and ^{233}U breeding from thorium, a preliminary neutronic design of an Accelerator-Driven Sub-critical System (ADS) is presented. The ADS reactor core design with “HEU–Thorium Oxide fuel” was coupled with proton accelerator and spallation target. The neutron source (ADS system) feasibility of HEU burning and isotopes production was evaluated. The multiplication factor K_{eff} , the production of ^{233}U and depletion of ^{235}U were computed using the MCNPX 2.7.0 code. The results indicated that the introduction of thorium fuel with HEU into the ADS core gives an efficient method to produce ^{233}U isotopes and to burn ^{235}U isotopes more efficiently. Additionally, less minor actinides (MA) production and generation of energy can be achieved.

Country/Int. organization

Egypt

Authors: Mr ALI, Ahmed (EGYPTIAN ATOMIC ENERGY AUTHORITY); Prof. HASSAN ABOU-GABAL, Hanaa (Department of Nuclear and Radiation Engineering, Faculty of Engineering, Alexandria University, Egypt.); Prof. ADEL BADAWI, Alya (Department of Nuclear and Radiation Engineering, Faculty of Engineering, Alexandria University, Egypt); Prof. ELKAFAS, Abdelrahman (Reactors Department, Nuclear Research Centre, Egyptian Atomic Energy Authority, Egypt)

Presenter: Mr ALI, Ahmed (EGYPTIAN ATOMIC ENERGY AUTHORITY)

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