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## A model for predicting tritium flux from blanket mock-up in Tokamak fusion reactors

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The tritium is considered as one of main fuels for D-T nuclear fusion reactors, where it is planned to be produced from a blanket of reactors by using the interactions between 14.1 MeV neutrons from nuclear fusion reactions and lithium from the blankets. In this work, the simulations of the tritium production from mock-up breeding blanket due to interactions of neutrons and lithium in the blanket are carried out using the Monte Carlo N-Particle transport code (MCNP) version MCNPX. Four designs of mock-up breeding blanket, including a design with a pure natural lithium, a design with lithium titanate ( $\text{Li}_2\text{TiO}_3$ ) based compound, a design with a compound based on a combination of a pure natural lithium and thorium, and a design with a compound based on a combination of lithium titanate and thorium. It is found that the production of tritium significantly increases with the inclusion of thorium, where an increase of tritium production with a factor of 2 can be achieved.

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