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Photon angular distribution and radiative capture cross section of ^{2}H(α, γ)^{6}Li reaction[1] SHUBHCHINTAK ., Texas AM University Commerce, Commerce, Texas-75429, A. M. MUKHAMEDZHANOV, Cyclotron Institute, Texas AM University College Station, Texas-77843, C. A. BERTULANI, T. V. NHAN HAO, Texas AM University Commerce, Commerce, Texas-75429 — In the area of nuclear astrophysics, the lithium problem is one of the long standing puzzles and is a hot topic in modern cosmology. It originates from the disagreement of the observed abundance of [^{7}Li/H] and the isotopic ratio [^{6}Li/^{7}Li] in stars to those predicted by the Big Bang Nucleosynthesis model. These two problems are respectively named as first and second lithium puzzle. Given that the yield of the observed and the predicted primordial ^{7}Li are quite well established, the second lithium puzzle needs accurate determination of ^{6}Li abundance which further can be determined from the ^{2}H(α, γ)^{6}Li reaction if the observed ^{6}Li is primordial. After a number of unsuccessful attempts, recently the LUNA collaboration presented the first successful measurement of ^{2}H(α, γ)^{6}Li reaction at two different Big Bang energies (94 and 134 keV). In this context we present our calculations of the photon angular distribution and cross section for the ^{2}H(α, γ)^{6}Li using a potential model. Our calculations provide the best kinematics conditions for the ^{2}H(α, γ)^{6}Li reaction and can improve the accuracy of future experiments.

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