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Impact of the γ-ray strength function on γ-process nucleosynthesis ALEXANDER DOMBOS, ANNA SIMON, University of Notre Dame — The γ process refers to the production of the 35 neutron-deficient nuclides that cannot be produced in the slow neutron-capture process or rapid neutron-capture process. Modeling this process with network calculations requires the input of an astrophysical environment and the nuclear physics. In this case, the nuclear physics refers to the tens of thousands of reactions linking thousands of nuclides, many of which are radioactive. Because measuring all of these reaction rates is unrealistic, the statistical model is commonly used to calculate the reaction rates. One key ingredient in the statistical model is the γ-ray strength function. In this work, the statistical model as implemented in TALYS was used to calculate (n,γ), (p,γ), and (α,γ) reaction rates with different models for the γ-ray strength function. These reaction rates were used in network calculations to investigate the impact of the γ-ray strength function model on the predictions of the γ-process nucleosynthesis calculations. Results from this sensitivity study will be presented.

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