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Sensitivity study on the final abundance pattern of the r-process due to fission barrier uncertainties

Monday, 9 September 2024 17:00 (1 minute)

The role of nuclear fission in the r-process nucleosynthesis occurring in neutron star mergers is studied. Current theoretical nuclear physics models([1][2][3]) are based on different assumptions on the fission barrier for different fission channels (spontaneous fission, neutron-induced fission, β-delayed fission, etc). In this work, the
nuclear reaction network calculation based on a consistent description for different fission channels is provided. It is shown that the neutron-induced fission channel is the dominant fission channel to influence the final abundance pattern.

[1]Petermann, I., Langanke, K., Martínez-Pinedo, G., et al. 2012, EPJA, 48, 122
[2]Bao, X. J., Guo, S. Q., Zhang, H. F., et al. 2015, JPhG, 42, 085101
[3]Schmidt K-H, Jurado B, Amouroux C and Schmitt C 2016 Nucl. Data Sheets 131 107

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