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From beta-stability to neutron drip-line: a study of radiative neutron capture for the even-even nuclei ABDELLATIF DABLOUK, University of Notre Dame — Radiative neutron capture cross-sections for even-even nuclei from beta-stability to the neutron drip-line (as per the FRDM) are presented. In the theoretical study, the cross-sections are calculated using the CIGAR statistical model code in conjunction with a core-coupling code that accounts for the direct capture component in the radiative capture process. These neutron capture cross-sections are more suitable for nucleosynthesis studies modeling the abundances of nuclei after the r-process freeze-out. The abundances extracted from this project help elucidate some of the nuclear structure and nuclear physics that pertain to, specifically, neutron-rich nuclei and, more generally, the r-process as a whole.

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