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Modeling x-Ray bursts with New Nuclear Physics KARL SMITH, ALEX BROWN, JARED DUNNMON, ALEXANDER HEGER, EMILY JOHNSON, ALAN KRUIZENGA, THOMAS RAUSCHER, PETER REDL, ALEXANDER SAKHARUK, HENDRIK SCHATZ, MICHAEL WIESCHER, MARK WALLACE, National Superconducting Cyclotron Laboratory — Multi-zone x-ray burst models simulate thermonuclear explosions on the surface of accreting neutron stars. The underlying nuclear reaction sequence in the x-Ray burst is the rp-process. We used an updated nuclear reaction network, in which we updated mostly rp-process reactions, in a one-zone model and observe its impact on x-Ray bursts, using the x-Ray light curve and final produced ashes. We also explored the validity of one-zone approximations as tools to investigate nuclear physics by comparing to a full 1D multi-zone model.

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