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The imprint of strong neutron star crust neutrino cooling on superbursts and transient outbursts[1] EDWARD BROWN, Michigan State University — The temperature in the outer crust (densities $< 10^{11}\,\mathrm{g\,cm^{-3}}$) of an accreting neutron star determines the ignition conditions for superbursts—rare, energetic explosions in the accreted neutron star envelope—and the cooling of the surface layers when the accretion of matter halts. Recently, Schatz et al. discovered that neutrino emission from cycles of electron captures and β^- decays on neutron-rich nuclei at densities $\approx 10^{10}\,\mathrm{g\,cm^{-3}}$ can efficiently cool the neutron star crust and thermally decouple the neutron star envelope from the deeper interior. Motivated by this work, we report here our preliminary findings from using time-dependent models of an accreting neutron star's crust, which include this cooling, to explore its impact on superburst ignition and the cooling of quasi-persistent transients.

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