

# PHAROS Conference 2020: The multi-messenger physics and astrophysics of neutron stars



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## Thermodynamically consistent equation of state for an accreted crust

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Neutron stars (NSs) in low-mass X-ray binaries have an accreted crust, whose equation of state and composition differs from that in isolated NSs. To determine it, one usually makes a number of simplifying assumptions regarding both thermodynamics and kinetics of crust matter. We critically revise some of these assumptions and propose new thermodynamically consistent derivation of the crust equation of state. As a by-product of this work, we also present a simple formula showing how much heat is released in the non-equilibrium crust per accreted baryon.

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