

## The Structure and Signals of Neutron Stars, from Birth to Death



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# Quiescent thermal emission of neutron stars in LMXBs

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The theoretical modeling of the thermal relaxation of the neutron star crust in low mass X-ray binaries may be used to establish constraints on the crust and envelope composition and transport properties, depending on the astrophysical scenarios assumed. I will show numerical simulations of the neutron star crust thermal evolution and compare them with inferred surface temperatures for five sources: MXB 1659-29, KS 1731-260, EXO 0748-676, XTE J1701-462 and IGR J17480-2446. I will also present stationary envelope models to be used as a boundary condition for the crustal cooling models, showing how to set constraints to the envelope composition depending on the accretion mass rate. The evolution of MXB 1659-29, KS 1731-260 and EXO 0748-676 can be well described within a deep crustal cooling scenario while XTE J1701-462 and IGR J17480-2446 can only be explained with models beyond crustal cooling, for which I will present alternative scenarios.

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