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Thermal Conductivity of Accreting Neutron Stars Crusts. LILIANA CABALLERO, CHARLES HOROWITZ, Indiana University — Many Neutron Stars in binary systems exhibit X-ray outbursts. Cooling times after a burst depend on where in the crust heating from thermonuclear and pycnonuclear reactions occur, and the crust's thermal conductivity. The thermal conductivity depends on electrons scattering from nuclei. We use molecular dynamics simulations to determine the structure of the crust when large numbers of impurities are present. We find a regular lattice, instead of an amorphous solid, with a large thermal conductivity. This high conductivity may require additional heating from pycnonuclear reactions in order to explain the ignition temperatures of superburts.

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