

# Neutron star crust deformations, solar system mountains, and gravitational waves

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“Mountains”, or non-axisymmetric deformations of rotating neutron stars, efficiently radiate gravitational waves. We consider analogies between neutron star mountains and surface features of solar system bodies. Both neutron stars and moons, such as Europa or Enceladus, have thin crusts over deep oceans while Mercury has a thin crust over a large metallic core. Thin sheets may wrinkle in universal ways. Europa has linear features, Enceladus has “Tiger” stripes, and Mercury has lobate scarps. Neutron stars may have analogous features. The innermost inner core of the Earth is anisotropic with a shear modulus that depends on direction. Possible anisotropies in the neutron star crust material could produce mountains as the star is spun up or down.

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