Importance of Compton scattering to radiation spectra of isolated neutron stars

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ABSTRACT: Model atmospheres of isolated neutron stars with low magnetic field are calculated with Compton scattering taking into account. Radiation spectra computed with Compton scattering are softer than computed with Thomson scattering at high energies ($E > 5$ kev) for hot ($T_{\rm eff} > 10^6$ K) atmospheres with hydrogen-helium composition. Compton scattering is more significant to models with low surface gravity, This fact gives a new tool to the measurement of neutron star compactness. Compton scattering is less important to models with solar abundance of heavy elements and is not changing the spectra of iron model atmospheres.