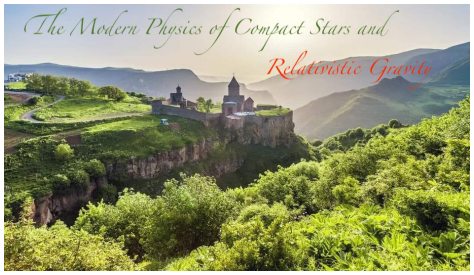

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Three-dimensional simulation of stationary heat transfer in magnetized neutron stars

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The Magnificent Seven is a unique group of seven nearby thermally emitting isolated neutron stars. They are visible mostly in a soft X-ray band, their spectrum is close to a blackbody one, and their lightcurves show pulsations (up to 25%) in detected radiaton. These pulsations tell us, that temperature distributions in such neutron stars may be highly non-uniform due to the effect of their magnetic fields of order ˜10ˆ13 G on a thermal conductivity coefficient in the crust and the envelope of these objects.

We solve a three-dimensional stationary heat transfer equation with anisotropic thermal conduction in the crust and the envelope of the neutron star for a given superposition of non-coaxial dipolar and quadrupolar fields. Synthetic lighcurves and spectra are computed for calculated temperature distributions, and possible observational manifestations are discussed. The obtained results may help to determine better the structure of magnetic fields in objects like ones in the Magnificent Seven.

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