

The Modern Physics of Compact Stars and Relativistic Gravity

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Magnetosonic waves in the crust of a neutron star

Based on the MHD equations, it is shown that the energy release on the inner surface of the neutron star's crust leads to the generation of magnetosonic wave beams that propagate to the surface of the star. It is shown that for frequencies $10^7 \text{ Hz} \leq \omega \leq 10^{11} \text{ Hz}$ and for the conditions of matter in the crust of a neutron star, these equations are linearized, and solutions are found. In the crust standing wave beam with a constant radius is formed, the outer base of which, situated on the surface of the star, becomes a source of radio waves. In this source electric currents are induced and the source becomes an antenna that emits radio waves in the circumstellar space. It is shown that with increasing frequency the radio emission intensity decreases, and therefore the spectrum of the pulsars is limited ($\omega \leq 10^{11} \text{ Hz}$).

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