

# Theory of radiation on neutron star atmospheres

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**ABSTRACT:** The possibility for direct investigation of thermal emission from isolated neutron stars opened about a quarter of century ago with the launch of the first X-ray observatories *Einstein* and *EXOSAT* stimulated developing models of the neutron star surface radiation which began at the end of 80's. Confronting observational data with theoretical models of thermal emission allows one to infer the surface temperatures, magnetic fields, chemical composition, and neutron star masses and radii. This information, supplemented with the model equations of state and neutron star cooling models, provides an opportunity to understand the fundamental properties of the superdense matter in the stars' interiors. Almost all available models are based on the assumption that thermal radiation emitted by a neutron star is formed in the superficial star's layers — atmosphere. The neutron star atmospheres are very different from those of usual stars due to the immense gravity and huge magnetic fields. In this presentation we review the current status of the neutron star atmosphere modeling, present most important results, discuss problems and possible future developments.