

XEUS and MAXIM science: Observations of compact cosmic objects

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I discuss the prospects of future basic missions in X-ray astronomy: The X-ray Evolving Universe Spectroscopy Mission (XEUS) and The MicroArcsecond X-ray Interferometer Mission (MAXIM). I compare these missions with the previous cosmic projects, Eistein, ROSAT and Chandra. The main astrophysical goals of the new missions are strong field relativistic effects (Doppler shifts and boosting, gravitational redshift, strong field lensing, line profiles and time variability, black hole masses and spins). For the physics of neutron stars, the main goals are to investigate spectral features from the surface of neutron stars. For magnetic fields of neutron stars, a strong-field QED (vacuum polarization) becomes important, significantly changing the dependence on the phase and energy polarization and providing a measurement of magnetic field strength, test of the magnetar paradigm and a probe of the strong-field QED itself.