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Astroparticle Physics, Gravitation and Cosmology: Predictions, Observations
and New Projects”



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Gravidynamics (scalar-tensor gravitation) and the observed discrete mass spectrum of compact stellar remnants in close binary systems.

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- (1) There are two new observational facts: the mass spectrum of neutron stars and candidates to black holes shows an evident absence of compact objects with masses within the interval 2 - 6 solar ones, and in close binary stellar systems with a low-massive optical companion the most probable mass value (a peak in the masses distribution of black hole candidates) is close to 7 masses of the Sun.
- (2) In the totally non-metric field/scalar-tensor model of gravitational interaction the total mass of a compact relativistic object with extremely strong gravitational field (an analog of black holes in GR) is approximately equal to 6.7 solar masses with radius of a region filled with matter (quark-gluon plasma) approx. 10 m.
- (3) Polarized emission of gamma-ray bursts, a black-body component in their spectrum and other observed properties could be explained by the direct manifestation of surface of these collapsars.

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