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M. Boskovic: Probing scalar particles and forces with compact objects

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In the highly relativistic regime around compact objects signatures of new physics may be unraveled. Some compact objects may in fact be constructed from beyond Standard Model matter. In particular, boson stars are useful toy models for exotic compact objects that could be produced in the Early Universe. Gravitational wave astronomy may also uncover a signature of a new force-mediating boson that must be suppressed through some sort of screening mechanism near matter sources. In this talk I will discuss the following: (i) how the scalar potential constrains the macroscopic properties of boson stars; (ii) how the coalescence of unequal-mass boson star binaries differs from the black hole binary system and (iii) how the kinetic screening operates in the system of binary compact objects.

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