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Aspects of black holes and compact objects in Lorentz violating gravity

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Although very constrained in the matter sector, violations of Lorentz invariance are still allowed in gravitational systems, provided that they are sufficiently suppressed. Actually, some models of Lorentz violating gravity, such as Horava gravity, provide interesting ways of UV completing gravitation. Beyond that, they can also have implications for macroscopic physics and astrophysical models. In this talk I will discuss the current status of Horava gravity (and its low energy version, related to Einstein-Aether gravity) in connection to black hole physics and other compact objects. In particular, I will review the issue of constructing BHs in these theories, as well as the problem of bounding deviations from GR by using binary pulsar measures and gravitational wave observations.

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