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A survey of compact objects in scalar tensor theories

Wednesday, 13 September 2023 10:30 (1 hour)

I will discuss some explicit solutions of higher order scalar tensor theories. We will start by reviewing classical GR solutions and some of their key properties such as integrability of geodesics in Kerr spacetime. We will then construct stealth solutions, i.e. solutions that are still Einstein metrics but with a non trivial scalar field. We will construct solutions which are distinct from GR, static and stationary by employing transformations and using the key works of Carter on Kerr geodesics. We will briefly discuss vacuum regular wormhole solutions as well as examples of static neutron star metrics that allow significantly higher compactness than GR.

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