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Metric-affine gravity effects on terrestrial (exo)planets' profiles

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Extended gravity theories modify gravitational phenomena at various scales, ranging from cosmological to the scale of our Solar System. Given the multitude of possible modifications, it is essential to test the models at different energy regimes. Gravity is well-tested here on Earth; any deviations from general relativity (GR) should be miniscule, which imposes some limitations on possible extensions. As it turns out, modified gravity has an influence on the internal structure of spherically-symmetric bodies, such as (exo)planets. In principle, it should be possible to constrain alternatives to GR using, for example, seismicvdata, informing us of the size and composition of layers inside the Earth. In my talk, I will present the way alternative gravity can modify the structure of planets composed of one and two layers, obtaining mass-radius relations of homogeneous and differentiated cold spheres. An additional degeneracy in the (exo)planets' profiles will be discussed together with their properties concluded from our findings in the framework of Palatini f(R) gravity. Possible generalizations will also be discussed.

Presenter(s) : KOZAK, Aleksander (University of Wrocław)