

## SEMINARIO

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### ***(SOME) LATEST CONSTRAINTS ON MODIFIED GRAVITIES FROM LARGE-SCALE STRUCTURES***

**Abstract:** We use the growth of latest large-scale structure data to constrain the both effective field theory of dark energy and scalar-tensor paradigmatic models. Considering as cases study Horndeski theories with the speed of gravitational waves equal to that of light and the popular Hu-Sawicki  $f(R)$  model, we show how constraints on the free parameters and the large-scale structure phenomenological functions can be improved by two ingredients: firstly by complementing the set of redshift-space distortions data with the three recent measurements of the growth rate  $f$  and the amplitude of matter fluctuations  $\sigma_8$  from the VIPERS and SDSS collaborations; secondly by applying a local Solar-System bounds on the variation of the Newton's constant. Such an analysis allowed us to conclude that: i) despite firmly restricting the predictions of weaker gravity, the inclusion of the Solar-System bounds do not prevent suppressed growth relative to the  $\Lambda$ CDM Concordance model at low redshifts; ii) the same bounds in conjunction with the large-scale structure data strongly restrict the redshift evolution of the gravitational slip parameter to be close to unity and the present value is constrained to one at the  $10^{-3}$  level; iii) in the effective field theory framework, the large-scale structure data favour a fifth force contribution to the effective gravitational coupling at low redshifts and at more than one sigma at present time; and iv) the validity of the quasi-static vs. the subHubble approximation for  $f(R)$  theories is revisited carefully in order to establish model-parameters constraints. Finally, we will say a few words on recent constraints obtained for theories with disformal coupling.

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