

# De *Madrid* al *Cosmos*

## Late-time cosmology in $f(R)$ gravity

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**Abstract:** Since the discovery of the current acceleration of the Universe by the Supernova Cosmology Project and the High-Z Supernova Search Team in 1998, several proposals have been put forward to explain the nature of the dark energy fluid that governs such late-time behaviour. Among these different proposals, the modified theories of gravity, which have since then been the focus of a renewed interest, try to obtain the late-time acceleration through modifications of the Einstein-Hilbert action. In this talk, we will focus on metric  $f(R)$  theories of gravity, a particular class of modified theories of gravity, which replace the Ricci scalar  $R$  in the action by a general function  $f(R)$ . In a first step we review the "designer" or "reconstruction" approach, which tries to derive viable  $f(R)$  actions from cosmological models. We apply this methodology to the modified Generalized Chaplygin Gas and obtain the compatible  $f(R)$ . This model is constrained, using the latest Planck 2015 data, within the cosmographic approach and through the computation of the effects on the matter power spectrum as observed today. The matter power spectrum is computed using the full theory of linear perturbations for metric  $f(R)$  theories without any approximation in the perturbed equations.

Lunes 30 de mayo, 16:00 h.  
Sala de Seminarios FT-I  
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Ciclo de seminarios organizado conjuntamente por los grupos

- *Teorías Efectivas en Física Moderna* (UCM)
- *Gravitación y Cosmología* (IEM-CSIC)

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