

## Unveiling dark energy from the large scale structure: the theoretical side of the challenge

It is now an exceptional time for modern cosmology, when we can observe the universe with high precision and connect cosmological measurements with theory. The excitement about the advances of observational cosmology is accompanied by the awareness that we face some major challenges: we still lack compelling theoretical models for dark matter, (that accounts for the formation of the structure we see around us), and dark energy, that drives cosmic acceleration, as well as a deeper understanding of the mechanism that set up primordial conditions, and these puzzles have deep roots in particle theory and gravity.

I will focus on the challenge posed by cosmic acceleration, review approaches to it and discuss theoretical issues involved in finding an optimal framework to test gravity and the physics of dark energy from upcoming high precision measurements of large scale structure.