

SEMINARI

principi  
metodo  
matematica  
generale  
spazio  
base  
fenomeni  
esempio  
fondamentali  
riferimento  
nucleare  
relativa  
filosofia  
studio  
grandezza  
misura  
incertezze  
teoria  
teorie  
classica  
sistemi  
modello  
fisica  
antistica  
materie  
sperimentale  
valore  
andezze  
teoria



UNIVERSITÀ  
DI TRENTO  
Dipartimento di  
Fisica

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Centre for Theoretical Physics

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Room A221 – Polo Ferrari 1 (Via Sommarive 5)

## STORY OF THE DARK UNIVERSE

### Abstract

According to Einstein's General Theory of Relativity, the attractive gravitational force slows down the expansion rate of the Universe. But in 1998, the observations of very distant exploding stars, predicted that the expansion rate of the Universe is actually speeding up at present. This was later confirmed by many other cosmological observations. This accelerated expansion of the Universe demands that on cosmological scales, the Universe is dominated by some mysterious repulsive "Dark Energy" that stretches the space itself very rapidly in time. The origin and physical nature of the "Dark Energy" which makes up nearly 70% of the energy budget of the Universe is one of the most outstanding problems in physics at present.

The most recent observations give additional surprise: the rate of expansion of the Universe is even faster today than what is expected from previous observations. This may be a hint for some new physics at cosmological scales. In this seminar, I shall talk on all these issues at a pedagogical level. I shall discuss the observational evidence for dark energy, the most relevant dark energy models that are consistent with cosmological observations as well as the latest observational evidence of higher expansion rate of the Universe and its possible implications for Dark Energy.

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