



Graduate Physics Seminar

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University of Nova Gorica - Ajdovščina Campus - Amphitheatre  
Vipavska 11, Ajdovščina

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## **Shedding light on the dark Universe with Gamma-Ray Bursts**

### ABSTRACT

Gamma-Ray Bursts are the most luminous and remote phenomena in the Universe, with isotropic-equivalent radiated energies up to more than  $10^{54}$  erg and a redshift distribution extending to at least  $z \sim 9$ . Thus, they are in principle very powerful tools for cosmology. I summarize the status and perspectives of the research activities aimed at using GRBs to investigate the expansion rate and geometry of the Universe, thus getting clues to "dark energy" properties and evolution, and to explore the early Universe at the end of the "dark ages" (re-ionization, first stars, star formation rate and metallicity evolution in the first billion of years).