

## **Abstract:**

Gamma-ray bursts are still not fully understood events. However, their exploration could provide a useful tool for a better understanding of the early Universe because they belong to the most distant and violent objects that astronomers know. This thesis tries to bring more information about a so-called group of intermediate-duration bursts claimed by different authors employing different data samples. Firstly, duration and spectral hardness properties of bursts from the Reuven Ramaty High-Energy Solar Spectroscopic Imager are statistically analysed. The obtained results bring a suspicion that these intermediate bursts gather into a separate group. Secondly, these bursts are investigated in more detail with respect to their spectral lags, peak count rates, redshifts, supernova observations, and so forth. Thirdly, long-duration bursts with known redshifts and with derived pseudo-redshifts detected by The Burst and Transient Source Experiment, Swift and Fermi bursts with known redshifts, are used to study the cosmological effects on the observed flux and fluence distributions.