Chi-square versus median statistics in SNIa data analysis

A. Barreira, P. P. Avelino

(Submitted on 20 Jul 2011)

In this paper we compare the performances of the chi-square and median likelihood analysis in the determination of cosmological constraints using type Ia supernovae data. We perform a statistical analysis using the 307 supernovae of the Union 2 compilation of the Supernova Cosmology Project and find that the chi-square statistical analysis yields tighter cosmological constraints than the median statistic if only supernovae data is taken into account. We also show that when additional measurements from the Cosmic Microwave Background and Baryonic Acoustic Oscillations are considered, the combined cosmological constraints are not strongly dependent on whether one applies the chi-square statistic or the median statistic to the supernovae data. This indicates that, when complementary information from other cosmological probes is taken into account, the performances of the chi-square and median statistics are very similar, demonstrating the robustness of the statistical analysis.

Comments:	6 pages, 8 figures
Subjects:	**Cosmology and Extragalactic Astrophysics (astro-ph.CO)**
Journal reference:	Phys.Rev.D84:083521,2011
DOI:	10.1103/PhysRevD.84.083521
Cite as:	**arXiv:1107.3971 [astro-ph.CO]**
	(or **arXiv:1107.3971v1 [astro-ph.CO]** for this version)

Submission history

From: Pedro Pina Avelino [view email]
[v1] Wed, 20 Jul 2011 13:24:53 GMT (264kb)

Which authors of this paper are endorsers?