

# The School on Cosmology Tools

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(Dated: March 4, 2014)

We report on the activities carried out during the first edition of the “School on Cosmology Tools”, that took place at the Instituto de Física Teórica UAM-CSIC, in Madrid, Spain, on November 12-15, 2013. The goal of the School was to train PhD students and young postdocs on the state-of-the-art programs (CosmoMC, CAMB, Healpix, Recfast/CosmoRec) commonly used in the analysis of the cosmological data and to give them the tools necessary to start doing research taking advantage of the latest cosmological data sets provided by Planck, BOSS etc. The lectures were given by renowned experts Jens Chluba, Wenjuan Fang, Jose Alberto Rubino-Martin, Licia Verde and Gong-Bo Zhao.

## I. THE SCHOOL

Over the last decades, cosmological observations have increased their precision to unprecedented levels. Since the first observations of the Cosmic Microwave Background, Primordial Nucleosynthesis and the upcoming large scale structure surveys and the latest results from the Planck satellite and the SDSS-III BOSS survey, the research topics within these observations have increased in complexity. The “School on Cosmology Tools” has the aim to bring researchers closer to the state-of-the-art tools currently used in Cosmology.

The first edition of the School took place at the Instituto de Física Teórica UAM-CSIC, on the Universidad Autónoma de Madrid campus in Spain, on November 12-15, 2013. A total of 36 international PhD students and young researchers attended, coming mostly from Europe but also from the United States, India, Russia and South Africa. The courses covered both theoretical and practical topics, with lectures on CMB Physics, Statistics, Recombination Physics and High Performance Computing (HPC), and also included hands-on experience with the codes CosmoMC, CAMB, Healpix, Recfast/CosmoRec on the local cluster [1].

The courses were given by Jens Chluba, Wenjuan Fang, Jose Alberto Rubino-Martin, Licia Verde and Gong-Bo Zhao. The slides of the lectures and talks during the School, along with extra material (exercises, code samples etc), can be found online at the School website [2], while recordings of two of the lectures can be found at the IFT’s YouTube page [3]-[4].

Finally, during the last day of the School, the students had the opportunity to present the results of a number of exercises inspired by the different theoretical topics and codes covered by the School program. From the feedback received from the students, we concluded that they were overwhelmingly enthusiastic with both the infrastructure and the quality of the lectures. The second edition of the School on Cosmology Tools will take place at the Canary Island of La Palma in Spain in 2015.

## Acknowledgements

The School was financially supported by the Universidad Autónoma de Madrid, the Instituto de Física Teórica UAM-CSIC through the Spanish MINECO’s “Centro de Excelencia Severo Ochoa” Programme and from the Spanish MINECO’s Consolider-Ingenio 2010 Programme under grant MultiDark CSD2009-00064. Also, we acknowledge the use of the cluster Hydra for the duration of the School and the financial support of the HPC company Bull.

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[1] <http://www.ift.uam-csic.es/hydra/>

[2] <http://workshops.ift.uam-csic.es/iftw.php/inicio/congreso?id=150>

[3] Statistics: <http://www.youtube.com/watch?v=fuqi69bebtU>

[4] CMB Physics: <http://www.youtube.com/watch?v=5gd4eic8V0o>

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