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国台学术报告 NAOC COLLOQUIUM

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Time: Wednesday 2:30 PM, Dec. 16th Location: A601 NAOC

Testing Cosmological Models with X-ray Galaxy Clusters

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Prof. Dr. Hans Böhringer is staff member at the MPE and Professor at the Ludwig-Maximilians-Universität München. He got his doctoral degree at Heidelberg University in 1980 based on research work on upper atmospheric processes conducted at the Max-Planck-Institut for Nuclear Physics at Heidelberg for which he received the Otto-Hahn-Medaille awarded by the Max-Planck-Gesellschaft. From 1980 to 1984 as a research associate at the Max-Planck-Institut for Nuclear Physics he conducted experimental research on ion-molecule reaction kinetics, atmospheric processes, and interstellar cloud chemistry. This included a research stay at the Aeronomy Laboratory at Bolder, Colorado with 1 1/2 year Alexander v. Homboldt postdoctoral fellowship. In 1984 he joined the Max-Planck Institut fuer extraterr. Physik leading a research group for astrophysical studies on galaxy clusters and cosmology. Since 1996 he is lecturing regularly at the LMU München.

Abstract

We use a large, statistically very well characterised X-ray flux-limited sample of galaxy clusters to study the large-scale structure of the Universe out to redshifts of ~ 0.4. Based on the cluster mass function we obtain tight constraints on the matter density and amplitude parameter of the density fluctuation power spectrum. We find some tension in the resulting amplitude parameters with the prediction from the PLANCK results in the frame of the standard Lambda-CDM cosmological model. The tension implies a less pronounced fluctuation amplitude of nearby large-scale structure as compared to the predictions based on Planck and a pure LCDM model. The results can be reconciled, however, by for example introducing massive neutrinos. We also use the cluster sample to study the matter distribution in the local Universe in a cosmographical fashion. One of the findings of this research is a locally underdense region in the Southern Galactic Cap region, with interesting consequences for local measurements of cosmological parameters, like the Hubble constant.

All are welcome! Tea, coffee, biscuits will be served at 2:15 PM.