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Tests and problems of the standard model in Cosmology

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Main foundations of the standard Lambda-CDM model of Cosmology are:

- 1) The redshifts of the galaxies are due to the expansion of the Universe plus the peculiar motions;
- 2) The cosmic microwave background radiation and its anisotropies come from the high energy primordial Universe when matter and radiation become decoupled;
- 3) The abundance pattern of the light elements is to be explained in terms of the primordial nucleosynthesis;
- 4) The formation and evolution of galaxies can only be explained in terms of gravitation within a inflation+dark matter+dark energy scenario.

Numerous tests have been carried out on these ideas and, although the standard model works pretty well to fit many observations, there are also many data that present some apparent caveats to be understood with it. In this talk, I offer a brief review of these tests and problems, as well as some examples of alternative models.

Summary

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