CICLO DE CONFERENCIAS DE LA FACULTAT DE FÍSICA
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The Fundamental Constants and their Time Variation

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Resumen

In the Standard Model of Particle Physics there are 28 fundamental constants. Theoretically they are not understood. I will discuss these constants, which are mostly mass parameters.

Astrophysical experiments indicate that the fine structure constant depends on time. In this case Grand Unification implies a time variation of the QCD scale. Thus the masses of the atomic nuclei and their magnetic moments will vary slowly in cosmological time.

I proposed an experiment, which is currently carried out by Prof. Haensch at the MPQ in Munich and his group. The results indicate a time dependence of the QCD scale. An astrophysics experiment at the VLT in Chile gives a similar result.