SEMINARIO
Departamentos de Física Teórica I y II
Universidad Complutense de Madrid

INVITADO: Vicent Mateu

IFIC, Valencia, Spain

TITULO: Power Corrections and Event shapes: Roadmap to Precision Physics

LUGAR: FACULTAD DE CIENCIAS FÍSICAS UCM
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ABSTRACT

Soft-Collinear Effective Theory (SCET) is an effective field theory designed for describing processes involving collimated jets, and hence it is perfectly suited to study event shapes. In particular one can use it to make high-order resummation of singular partonic logarithms and to identify power corrections. In my talk I will introduce the basic concepts of SCET and show how one achieves factorization for a class of event shapes in a simple manner. This enables a very clean treatment of power corrections in the tail of the distribution, where an OPE can be defined. I will show how to use these high-precission theoretical predictions to determine the strong coupling constant to very high accuracy, and present results for the thrust distribution, thrust moments and the C-paramater distribution. Finally I will address the issue of mass effects on power corrections, discussing universality breaking and the anomalous dimension of the power corrections.