CERN Joint EP/PP Seminars

SPEAKER: Pietro Faccioli (LIP Lisbon)

TITLE: **Understanding quarkonium polarization Pietro Faccioli**

DATE: Mon 03/05/2010 11:00

PLACE: Council Chamber

ABSTRACT

Quarkonium polarization is presently not understood. Part of this puzzling situation is caused by the fact that most experiments only present a fraction of the information derivable from the data: only one polarization frame and only the polar projection of the decay angular distribution. Such incomplete results prevent model-independent physical conclusions.

We show that the polarization measurement must be approached as an intrinsically multidimensional problem. We also propose a frame-invariant formalism that minimizes the dependence of the measurement on the experimental acceptance, facilitating the comparison with theory and providing some control over systematic biases that might be caused by the limitations of the detectors.

We show that rotational properties of angular momentum imply the existence of a frame-invariant relation which applies to the dilepton decay distribution of any J=1 state, even in the presence of parity-violating effects (relevant to decays of gauge bosons), and which can be formally seen as a generalization of the (Drell-Yan specific) Lam-Tung identity.

Organised by: Maria Spiropulu & Guillaume Unal/PH-EP..... Tea and Coffee will be served at 10:30