

Seminário, Terça-feira 04/04/2023 14:00h

Local: Auditório: Méson Pi - DRCC

Patricia Magalhaes (Universidade Complutense de Madrid)

Titulo: CP violation in heavy Hadron decays

Abstract:

One of the main open questions in particle physics is the observed matter-antimatter asymmetry in our Universe. On the theoretical side, the Standard Model can generate an asymmetry toward CP violation (CPV) mechanisms. However, the amount known is still not enough. From the experimental side, this is one of the targets of LHCb collaboration, the large hadron collider beauty facility at CERN.

CPV measurements are then, widely recognized as a highly sensitive probe of the Standard Model with new sources needed to account for the matter-antimatter asymmetry observed in the Universe.

There is a long-term discussion involving the source of the strong phase needed to generate direct CPV in charmless B and D decays. It could be new physics or due to non-perturbative hadronic contributions that are difficult to calculate from first principles.

In this talk, I will present the main issues and ongoing research on CP violation in heavy-meson hadronic decays. I will show that the hadronic final state interactions can be a source of some observed asymmetries in  $B \rightarrow hhh$  ( $h = \pi, K$ ). I will also show in more detail a recent result where one can enhance the charge-parity (CP) violation difference between  $D^0 \rightarrow \pi^-\pi^+$  and  $D^0 \rightarrow K^-K^+$  decay up to the current experimental value recently observed by the LHCb collaboration.