Contribution ID : **21** Type : **parallel talk**

Study of the possible role of triangle singularities in $B^- \to D^{*0}\pi^-\pi^0\eta$ and $B^- \to D^{*0}\pi^-\pi^+\pi^-$

Thursday, 7 June 2018 17:35 (0:20)

Collaboration

Abstract content

Studying the effects of triangle singularities in hadronic processes is of the utmost importance since they can originate peaks that may wrongfully be associated with resonances. In this work, the role of the triangle mechanism in the decays $B^- \to D^{*0}\pi^-\pi^0\eta$ and $B^- \to D^{*0}\pi^-\pi^+\pi^-$ is explored. Here, the singularity appears when B^- decays into $D^*K^{*0}K^-$, then K^{*0} decays into K^+ through pion emission, and K^-K^+ fuse together forming either the $a_0(980)$ or $f_0(980)$ which then decays into $\pi^0\eta$ or $\pi^+\pi^-$, respectively. As a result, the $K^*K^+K^-$ loop generates a peak in the invariant mass of π^-a_0 or π^-f_0 around 1420 MeV. The branching ratios that come from this peak are $Br(B^- \to D^{*0}\pi^-a_0; a_0 \to \pi^0\eta) = (1.66 \pm 0.45) \times 10^{-6}$ and $Br(B^- \to D^{*0}\pi^-f_0; f_0 \to \pi^+\pi^-) = (2.82 \pm 0.75) \times 10^{-6}$, which are well within the measurable range. Thus, this work makes interesting predictions about an effect of a triangle singularity in an experiment that is feasible in the present experimental facilities.

Based on: Eur. Phys. J. C 77 (2017) no.9, 599

Primary author(s) : PAVAO, Rafael (Valencia University, IFIC (Instituto de Física Corpuscular))

Co-author(s) : SHUNTARO, Sakai (IFIC); EULOGIO, Oset (University of Valencia, IFIC)

Presenter(s) : PAVAO, Rafael (Valencia University, IFIC (Instituto de Física Corpuscular))

Session Classification : Parallel Session A2