## WIN2019 The 27th International Workshop on Weak Interactions and Neutrinos.



Contribution ID: 74 Type: Oral

## Dalitz plot analyses of three body charmonium decays and study of $\Upsilon(1S)$ radiative dacays in BaBa

Thursday, 6 June 2019 11:54 (22 minutes)

We perform Dalitz plot analyses of  $J/\psi$  three-body hadronic decays to  $\pi^+\pi^-\pi^0$ ,  $K^+K^-\pi^0$  and  $K_S^0K^\pm\pi^\mp$  using the isobar and Veneziano models. The  $J/\psi$  is produced through the Inital-State-Radiation process. We also perform Dalitz plot analyses of  $\eta_c$  three-body hadronic decays to  $K^+K^-\pi^0$  and  $K_S^0K^\pm\pi^\mp$ , where the  $\eta_c$  is produced in two-photon interactions. We study the  $\Upsilon(1S)$  radiative decays to  $\gamma\pi^+\pi^-$  and  $\gamma K^+K^-$  using data recorded at center-of-mass energies at the  $\Upsilon(2S)$  and  $\Upsilon(3S)$  resonances. Branching fraction measurements and spin-parity analyses are reported for all the resonances observed in the mass spectra.

## Collaboration name

This abstract is submitted on behalf of the BaBar Collaboration.

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Session Classification: Flavor and Precision Physics

Track Classification: Flavor and Precision Physics