Contribution ID: 98 Type: not specified

## Probing CPV mixing in the Higgs sector in VBF at 1 TeV ILC

Tuesday 5 November 2024 16:00 (20 minutes)

With the current precision of measurements by ATLAS and CMS experiments, it cannot be excluded that a SM-like Higgs boson is a CP violating mixture of CP-even and CP-odd states. We explore this possibility here, assuming Higgs boson production in ZZ-fusion, at 1 TeV ILC, with unpolarized beams. The full reconstruction of SM background and fast reconstruction of the signal is performed, simulating 8 ab $^{-1}$  of data collected with the ILD detector. We demonstrate that the CP mixing angle  $Psi_{\text{mathrm}}$  between scalar and pseudoscalar states can be measured with the statistical uncertainty of 3.8 mrad at 68 $^{-1}$  for the CP parameter  $f_{\text{mathrm}}$  This is the first result on sensitivity of an  $e^+e^-$  collider to measure  $f_{\text{mathrm}}$  in vector boson fusion, recently published in Phys. Rev. D.

## Primary track

## Is the speaker a PhD student or post-doc?

Yes - I need some financial support (fee reduction) to attend Higgs 2024

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**Presenter:** Ms VUKASINOVIC, Natasa (Vinca Institute of Nuclear Sciences) **Session Classification:** Higgs physics at future colliders 2 - sal IV

Track Classification: Higgs physics at future colliders