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Inclusive Higgs Rate and Forward Detection at High Energy Muon Collider

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We study the inclusive Higgs production rate from the ZZ fusion at future 10 TeV muon collider. With the possible forward detector placed at the high η direction outside the shielding cone, the forward energetic muon particles can be detected. The Higgs signal process can be purified using the forward-dimuon information. We show that the 68% projected sensitivity on Higgs inclusive rate from ZZ fusion is 0.75%. The precision measurement of the ZZ fusion process can be converted to the ZZh coupling measurement. We also combine the result with other Higgs coupling precision studies on Muon Collider and HL-LHC as well as future electron-positron collider CEPC to make a global fit on the Higgs κ framework.

Authors: LYU, Kunfeng (University of Minnesota); LI, Peiran (University of Minnesota); LIU, Zhen

Presenter: LI, Peiran (University of Minnesota)

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