

HIGG PHYSICS WIH ILC

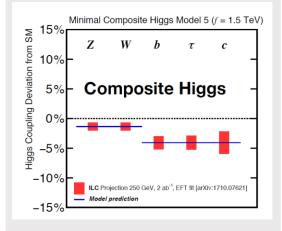
- I. Bozovic Jelisavcic, VINCA Institute of Nuclear Scences, Belgrade, SERBIA
- J. Tian, Tokyo University, JAPAN

On behalf of the ILC International Development Team Detector & Physics Working Group

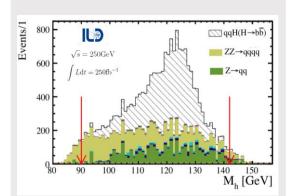
HIGHLIGHTS OF THE ILC HIGGS PHYSICS PROGRAM

THE LEAST UNDERSTOOD SECTOR OF THE SM Origin of EWSB? Higgs Portal to Hidden Sectors? Naturalness Fundamental or Composite? CPV and Baryogenesis

NEW PHYSCIS CALLS FOR PRECISION

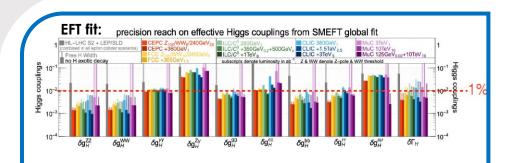


IT'S NOT ONLY STATISTICS THAT MATTERS

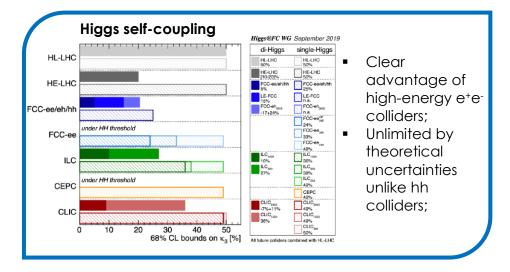


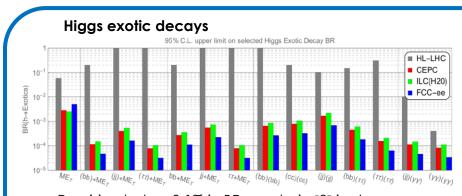
Same significance (5 σ) for H \rightarrow bb, with 100 times less events than at 13 GeV LHC [1].

1. ATLAS arXiv:1808.08238; CMS arXiv:1808.08242, T. Ogawa, PhD thesis, 2018; 2. Snowmass White Paper on Global SMEFT Fits, arXiv: 2206.08326; 3. Liu, Wang, Zhang, arXiv: 1612.09284;



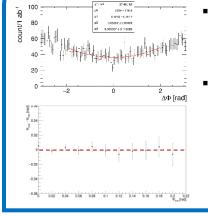
- EFT: Smaller the uncertainty larger the NP scale to be probed ($\sim 1/\Lambda^2$) independently of a particular model;
- Most couplings can be probed below 1% relative statistical uncertainty [2];





Precision below 0.1% in BR constrain [3] is also confirmed in full simulation in several individual measurements (H \rightarrow inv., H \rightarrow ϕ ϕ \rightarrow bb);

CPV in the Higgs sector



- 125 GeV mass eigenstate of the SM-like Higgs boson could be a CPV mixture of scalar and pseudoscalar states;
- 1 TeV ILC is a favorable environment to measure CPV mixing angle in HZZ vertex (ZZ-fusion) with statistical dissipation not larger than 5 mrad for <10% mixture of the CP-odd state;

