update on study of ILC staging

Junping Tian (U' of Tokyo)

for useful discussions, many thanks to
K.Fujii, D.Jeans, S.Komamiya, J.List, M.Peskin

reference staging scenarios

(proposed by M.Peskin)

stage 1: 500 fb-1 @ 250 GeV
stage 2: 500 fb-1 @ 550 GeV
stage 3a: 3500 fb-1 @ 550 GeV
stage 3b: 1500 fb-1 @ 250 GeV

expected precisions

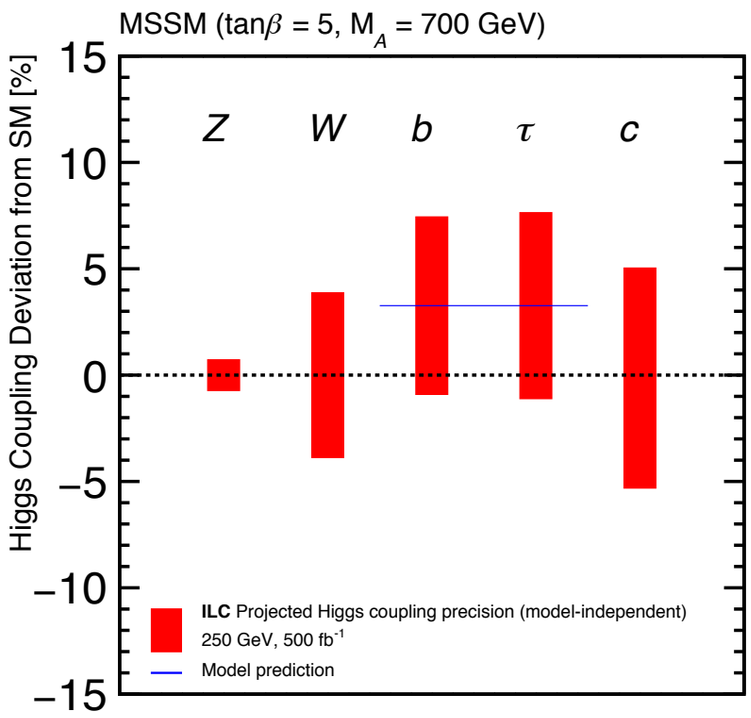
(model independent fit; sys. errors included; c.f. arXiv:1506.05992 / 1506.07830)

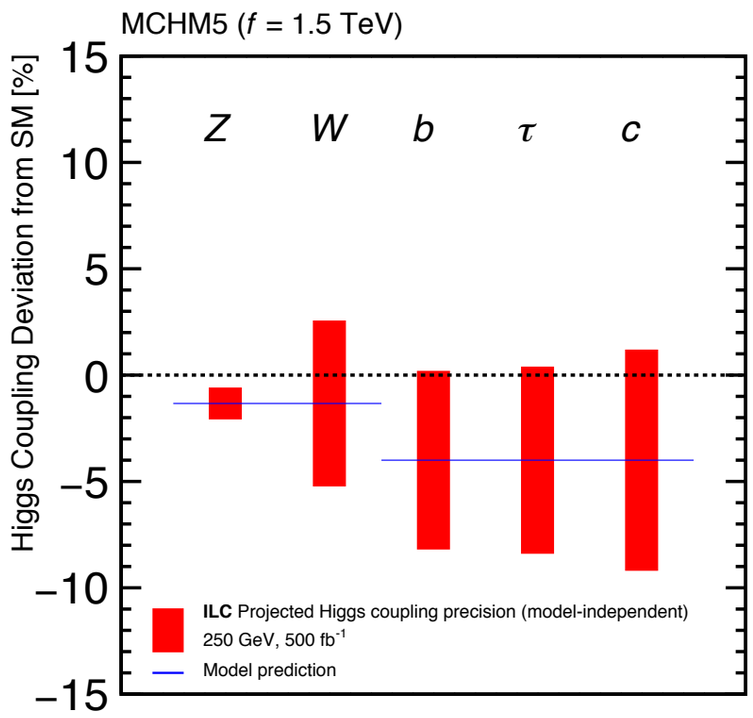
coupling $\Delta g/g$	stage 1	stage 2	stage 3a	stage 3b
HZZ	0.75%	0.69%	0.49%	0.33%
HWW	3.9%	0.91%	0.59%	0.42%
Hbb	4.2%	1.6%	0.82%	0.67%
Hcc	5.2%	2.9%	1.5%	1.2%
Hgg	4.9%	2.4%	1.2%	1.0%
Hττ	4.4%	2.0%	1.2%	0.88%
Hγγ	13%	8.4%	3.8%	3.4%
Htt	-	7.7%	2.8%	2.7%
Hμμ	27%	22%	12%	9.3%
Γ_H	8.8%	4.2%	2.5%	1.8%
Inv. (95% CL)	0.59%	0.57%	0.49%	0.30%
HHH	-	76%	26%	26%

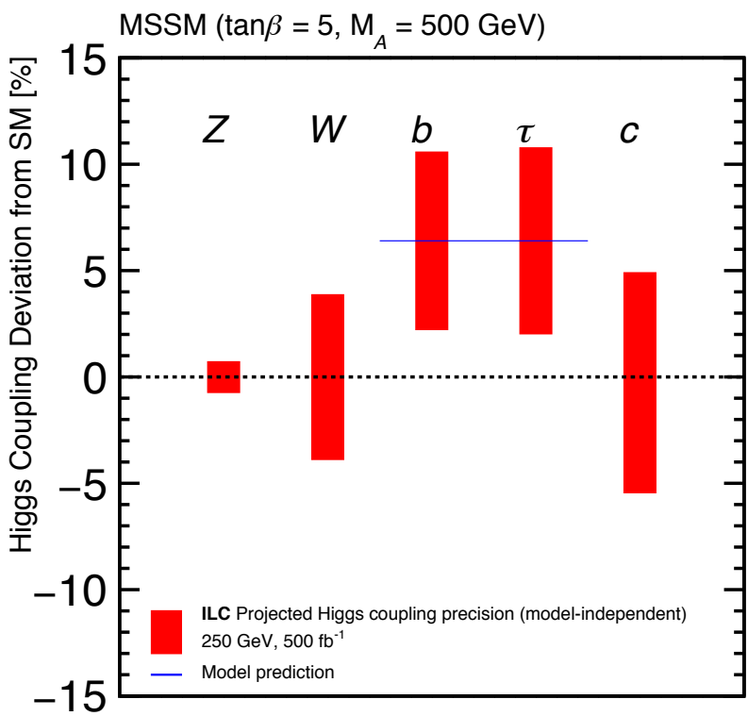
fingerprinting with 500 fb-1 @ 250 GeV

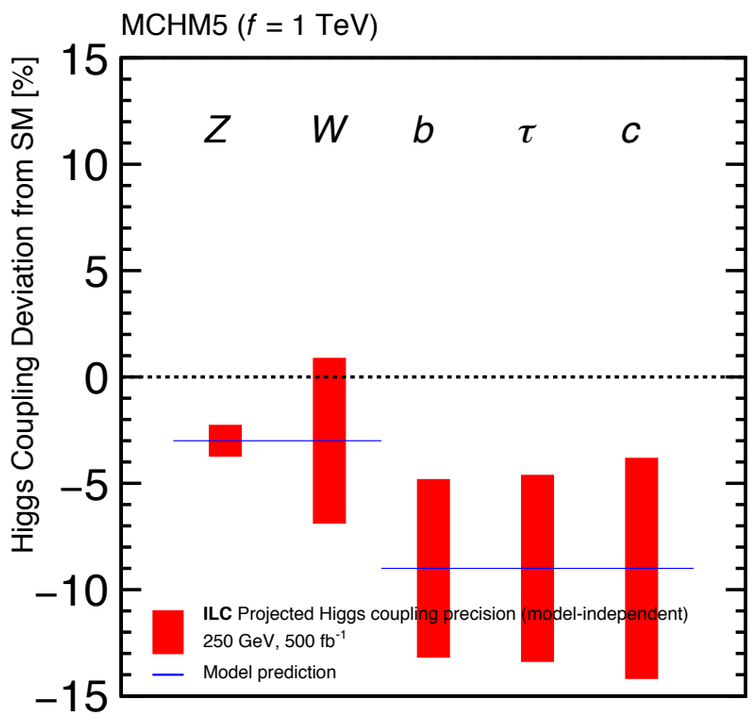
(for two different sets of scales for MSSM and MCHM5)

fingerprinting: SUSY or Composite (using absolute coupling)

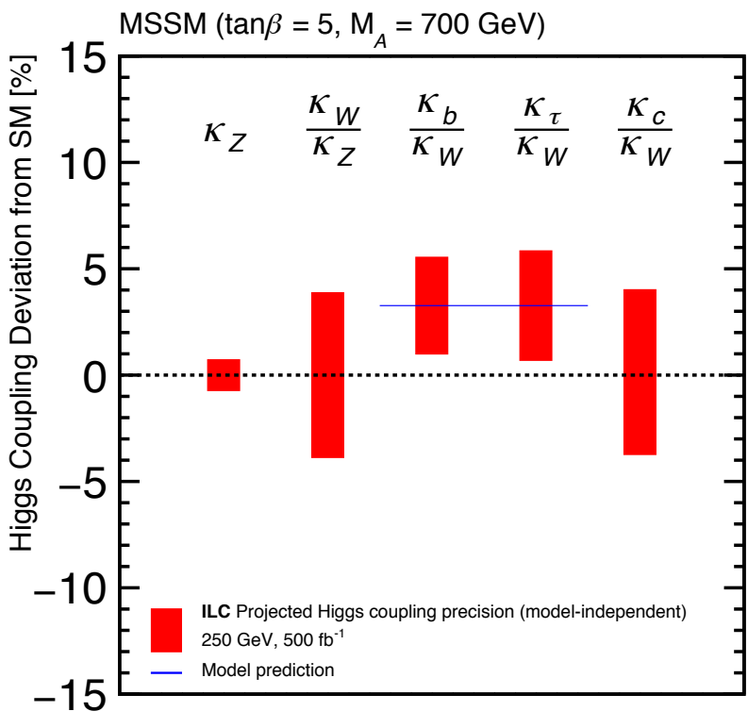


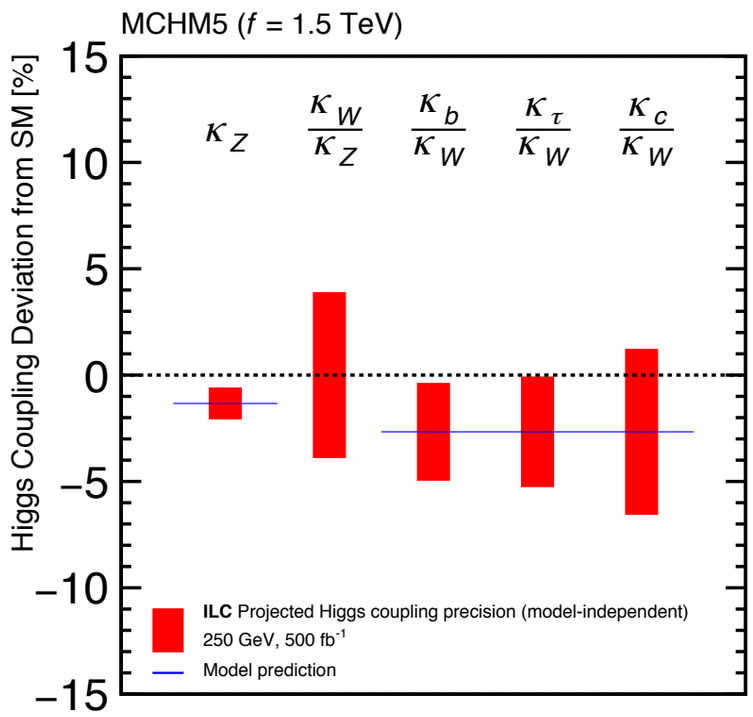


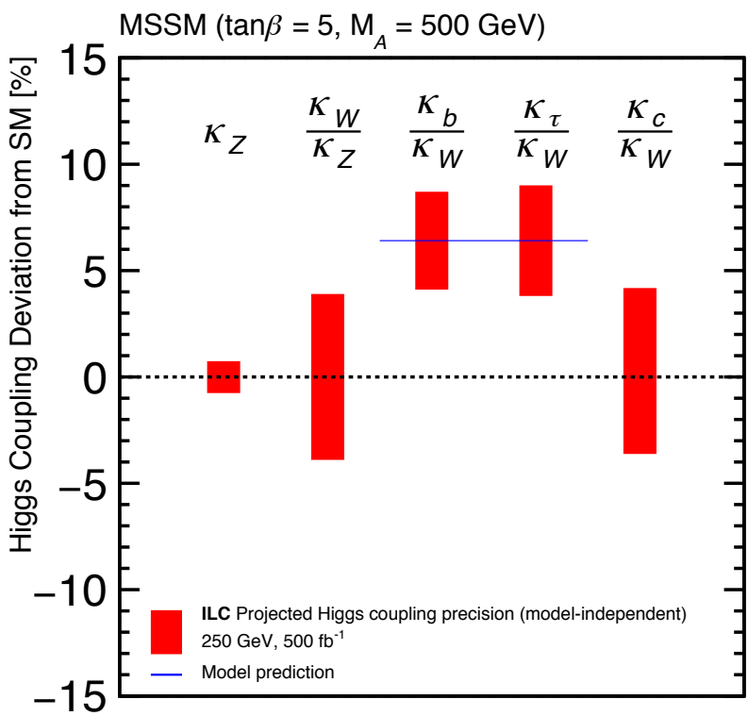


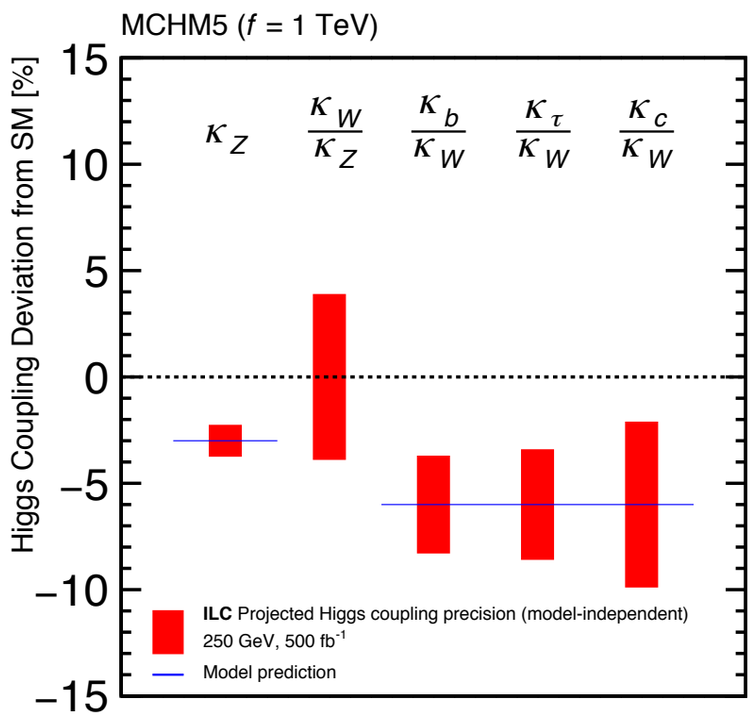


fingerprinting: SUSY or Composite (using ratio of couplings)









new (old) idea to improve Γ_H & couplings measurements

(proposed by K.Fujii & J.Tian)

based on custodial symmetry,

assume $\kappa_W / \kappa_Z = 1$,

which then can help determine κ_W without WW-fusion $\nu_e\nu_e H$ measurement (which is the main limiting factor at 250 GeV)

here in global fit, we assume $\kappa_W/\kappa_Z = 1$ holds within 0.5% (corresponding to $\Delta\rho$~1%) at least true in MSSM and MCHM5?

expected precisions

(model independent fit; sys. errors included; c.f. arXiv:1506.05992 / 1506.07830)

coupling $\Delta g/g$	stage 1 (custoduial)	stage 1
HZZ	0.75%	0.75%
HWW	0.90%	3.9%
Hbb	2.5%	4.2%
Hcc	3.9%	5.2%
Hgg	3.6%	4.9%
Hττ	2.7%	4.4%
Hγγ	13%	13%
Htt	-	-
Hμμ	27%	27%
Γ_H	5.5%	8.8%
Inv. (95% CL)	0.59%	0.59%
HHH	-	-

fingerprinting: SUSY or Composite
(using absolute coupling & assume custodial symmetry)