EF01: Higgs Couplings and properties

2020-07-11

Minutes of last meeting

- sigma(ZH) measurement via recoil analysis with qqH
- Differential Measurement with significant comparative advantage w.r.t LHC
- Higgs measurement that can bring significant information on top of the L.H.C measurements
- Higgs couplings that probe Higgs CP nature

Threshold scan?

Higgs CP
Abdualazem & Qiyu doing some analysis with fastsim

Optimal variable: PLB 306 (1993) 411-417
Method : JEHP 11 (2014) 028

$$\frac{d^4\Gamma}{dq^2 d\cos\theta_1 d\cos\theta_2 d\phi} = \quad = \frac{1}{m_H}\mathcal{N}(q^2)\mathcal{J}(q^2,\theta_1,\theta_2,\phi)$$

$$\begin{aligned}\mathcal{J}(q^2,\theta_1,\theta_2,\phi) = J_1(1+\cos^2\theta_1\cos^2\theta_2+\cos^2\theta_1+\cos^2\theta_2)\\ + J_2\sin^2\theta_1\sin^2\theta_2 + J_3\cos\theta_1\cos\theta_2\\ + (J_4\sin\theta_1\sin\theta_2 + J_5\sin 2\theta_1\sin 2\theta_2)\sin\phi\\ + (J_6\sin\theta_1\sin\theta_2 + J_7\sin 2\theta_1\sin 2\theta_2)\cos\phi\\ + J_8\sin^2\theta_1\ \sin^2\theta_2\ \sin 2\phi + J_9\sin^2\theta_1\ \sin^2\theta_2\ \cos 2\phi.\end{aligned}$$