some photon isolation studies

Les Houches 2013 proceedings:

[Nicolas Chanon, Nicolas Greiner, Thomas Gehrmann, GH]

$\gamma\gamma + jet$

$$p_T^{\text{jet}} > 30\ \text{GeV}, \quad p_T^{\gamma,1} > 40\ \text{GeV}, \quad p_T^{\gamma,2} > 25\ \text{GeV},$$
$$m_{\gamma\gamma} > 100\ \text{GeV}, \quad |\eta^\gamma| \leq 2.5, \quad R_{\gamma,\gamma} > 0.45.$$

$$\mu_0 = \tfrac{1}{2}\left(m_{\gamma\gamma} + \textstyle\sum_j p_T^{\text{jet}}\right), \mu = \mu_F$$

jets: anti-kT

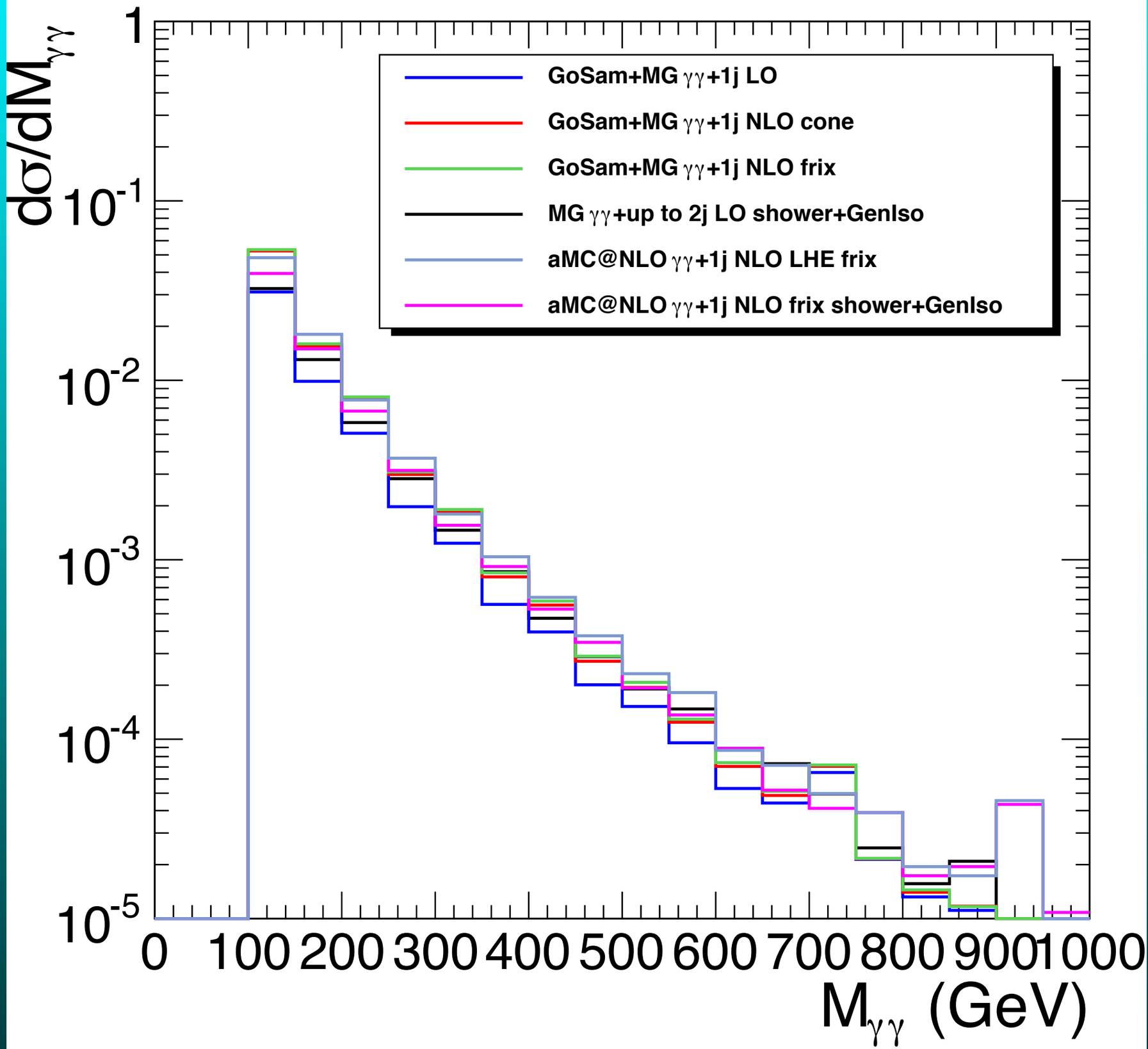
$$p_T^{\text{jet}} > 30\ \text{GeV}, \quad |\eta^j| \leq 4.7, \quad R_{\gamma,j} > 0.5$$

Frixione:

$$E_{\text{had,max}}(r_\gamma) = \epsilon\, p_T^\gamma \left(\frac{1-\cos r_\gamma}{1-\cos R}\right)^n .$$

$\epsilon = 0.05, n = 1$

GenIso: transverse momentum sum
of all particles in a cone of R=0.4
around the photon should not exceed $0.05\ p_T^\gamma$



MAX-PLANCK-GESELLSCHAFT

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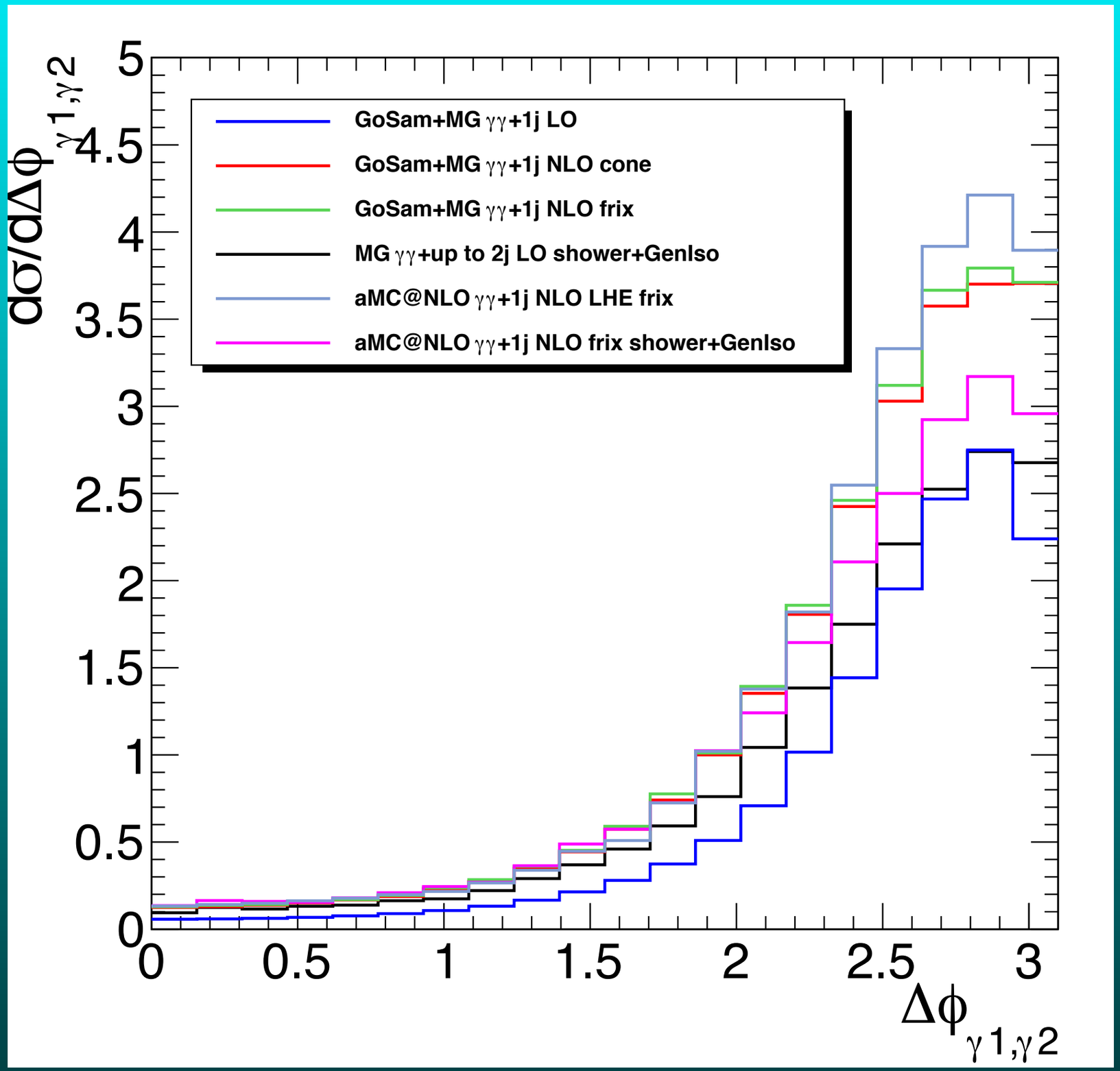
(Werner-Heisenberg-Institut)



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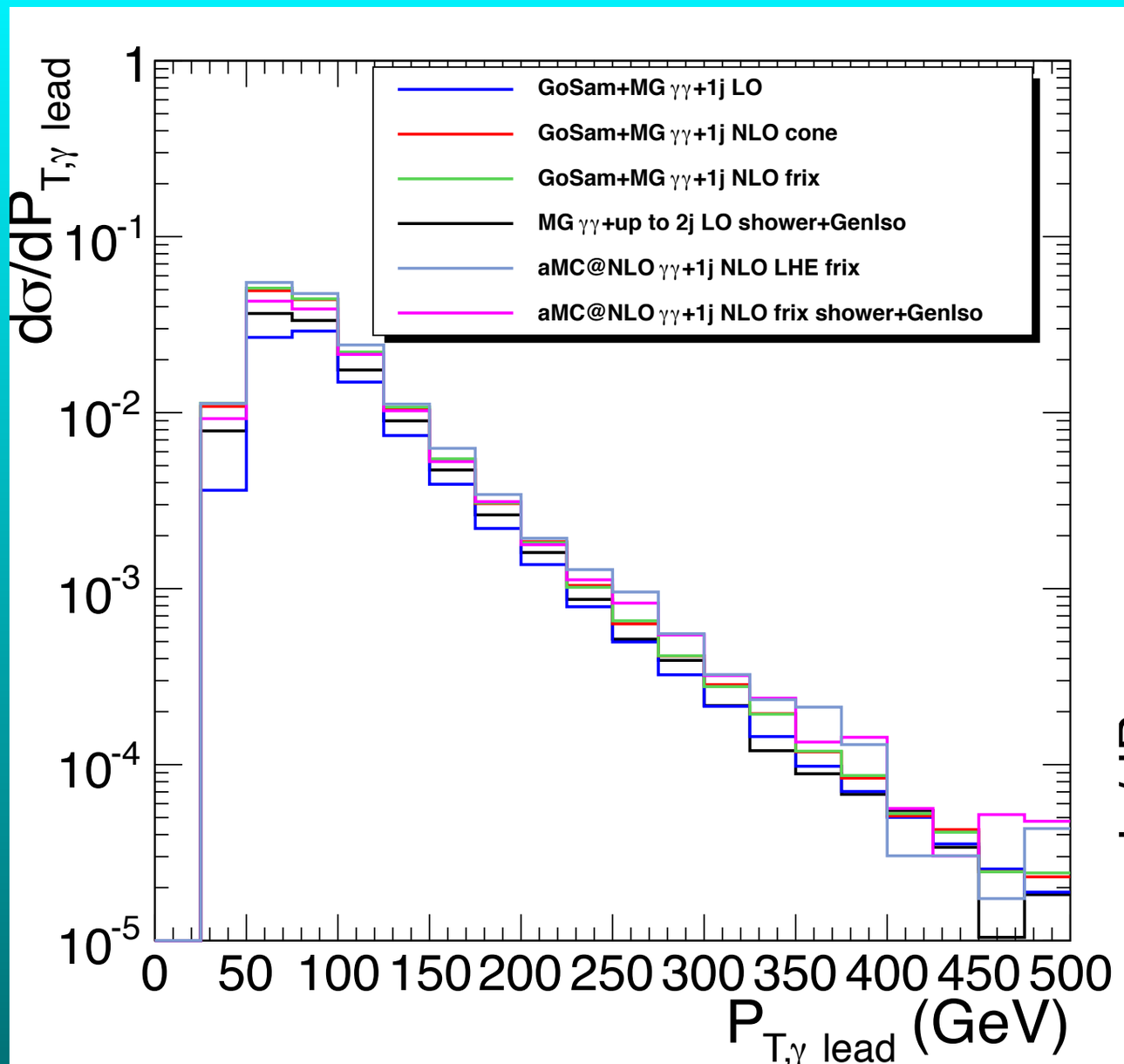

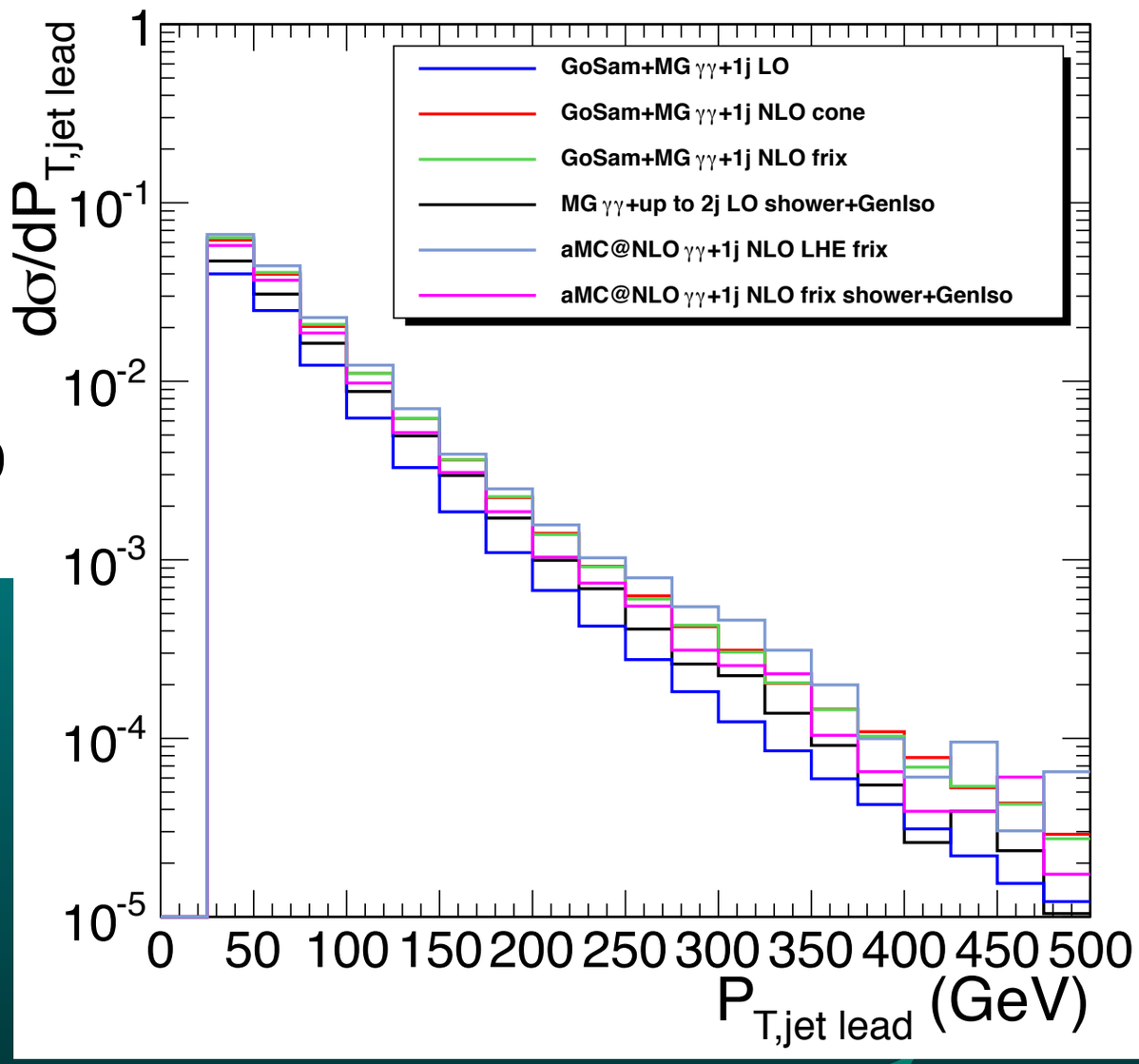

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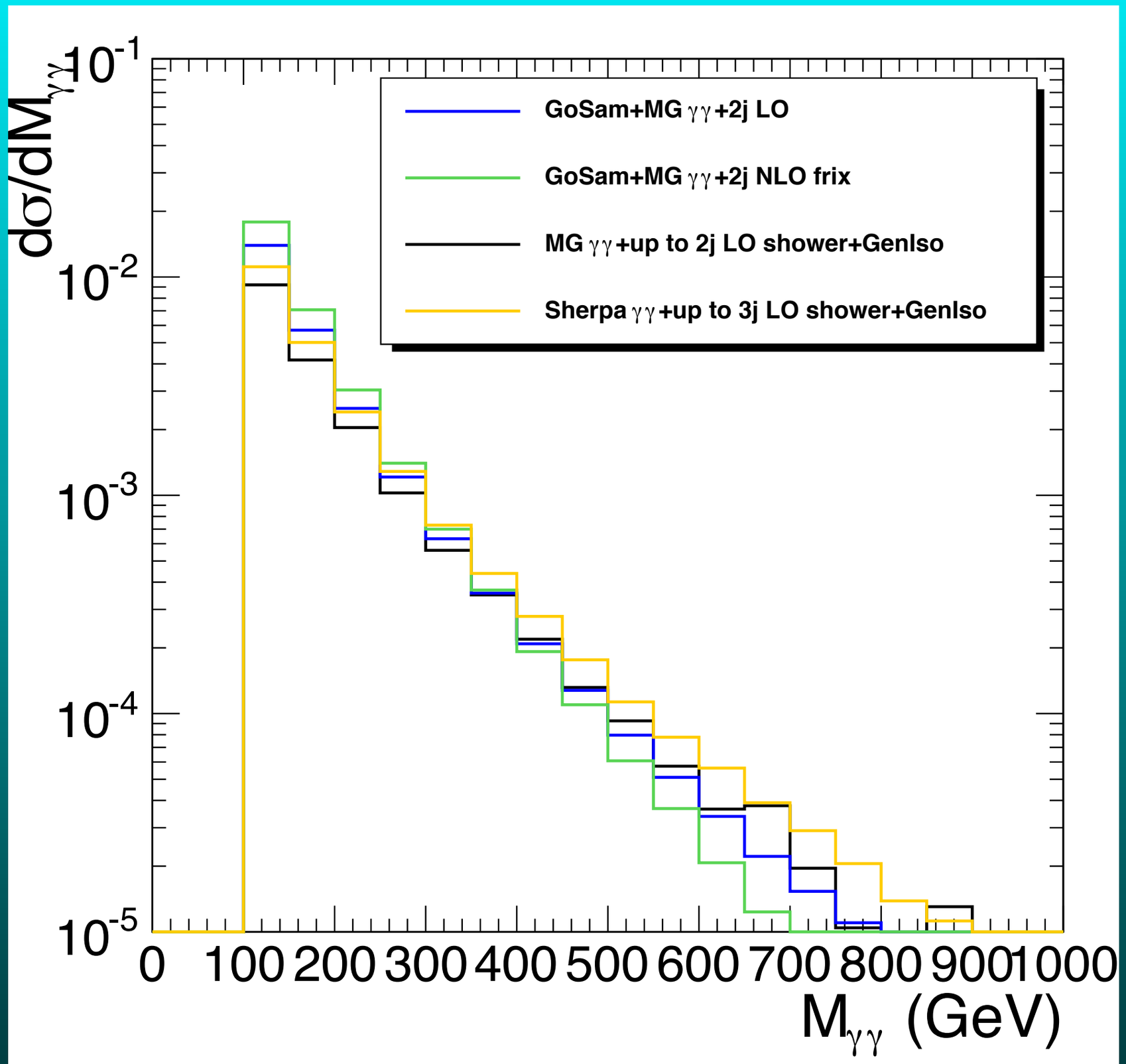
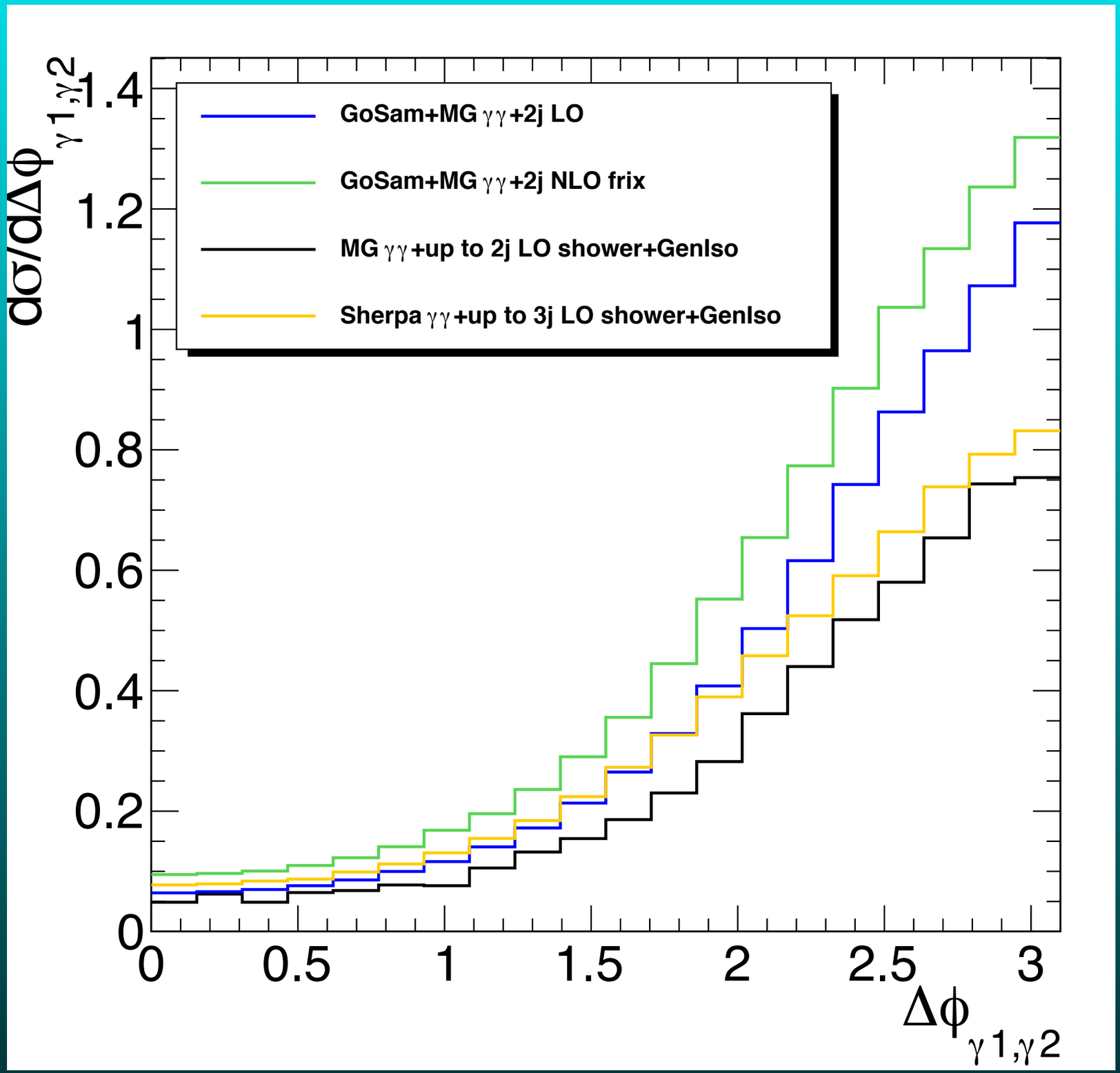
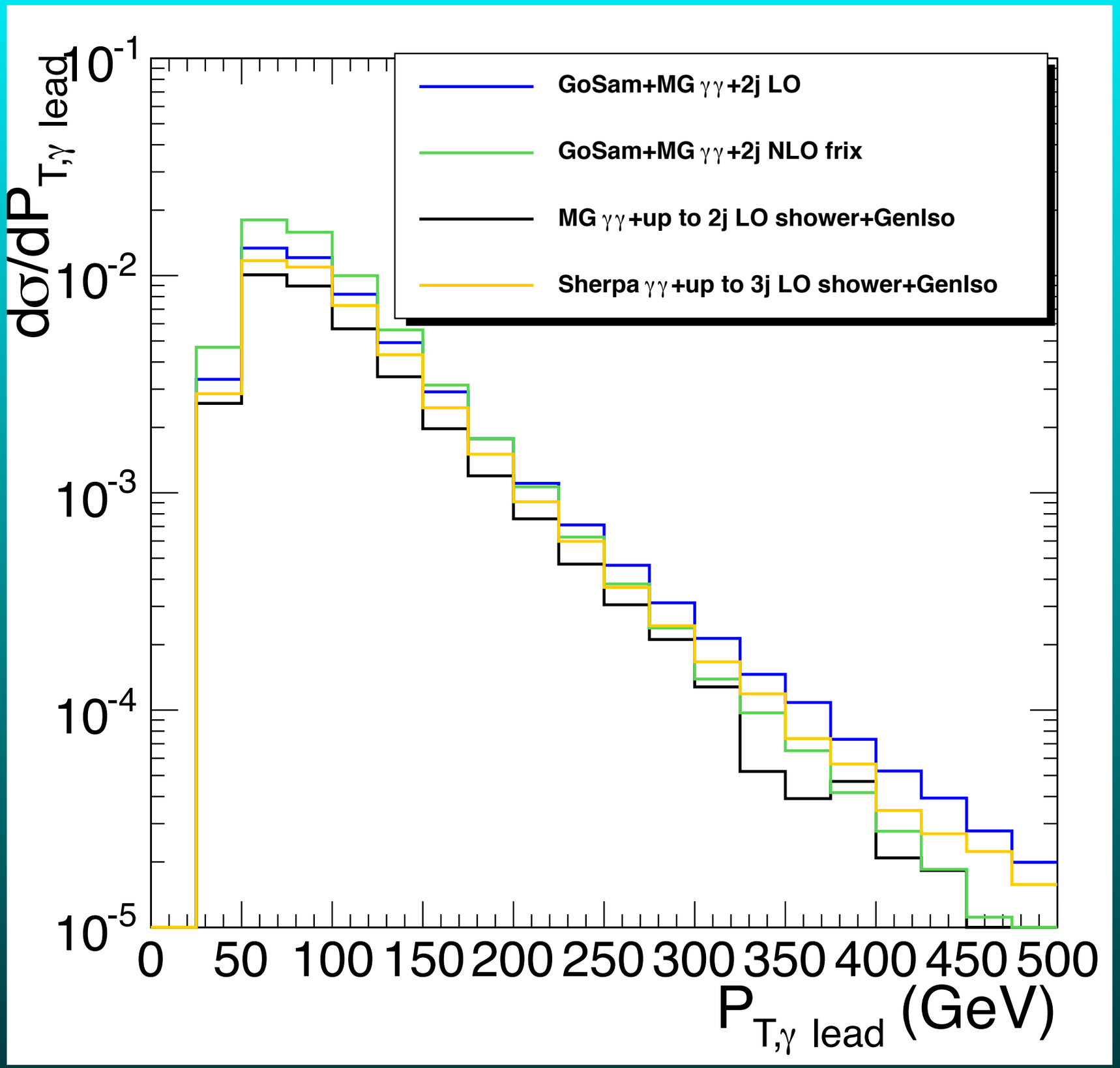
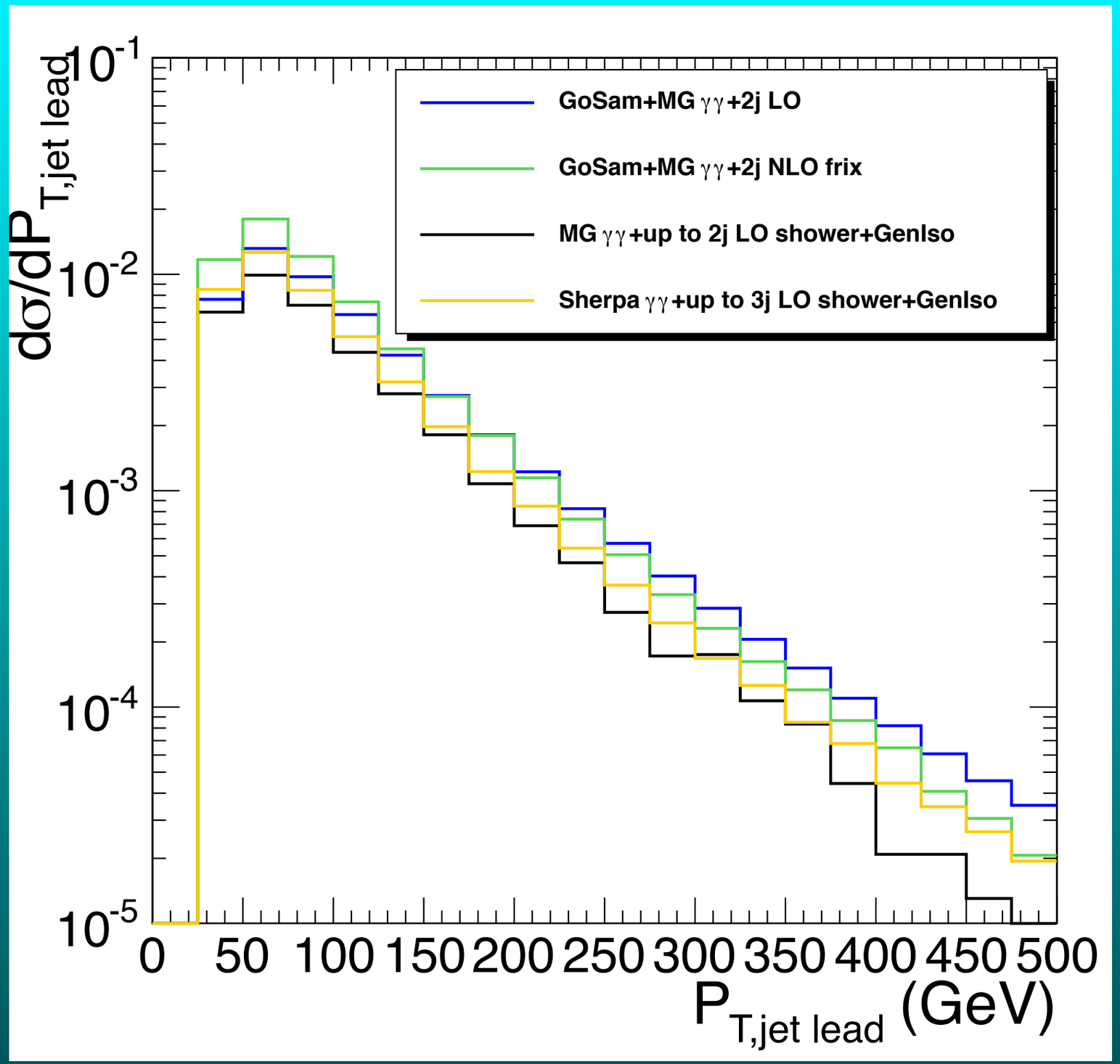


next: $\gamma\gamma + 2\,jets$







effect of shower more pronounced in diphoton+2jets than in diphoton+1jet

LH 2015:

study behaviour under tightening of isolation criterion

in particular fragmentation component at LO/NLO

$\gamma + jet$ **JetPhox:** contains fragmentation at NLO

cuts as in ATLAS study 1307.6795 (7 TeV)

$$\mu_R = \mu_F = \mu_f = E_{\mathrm{T}}^{\gamma}.$$

$$\Delta R = 0.4$$

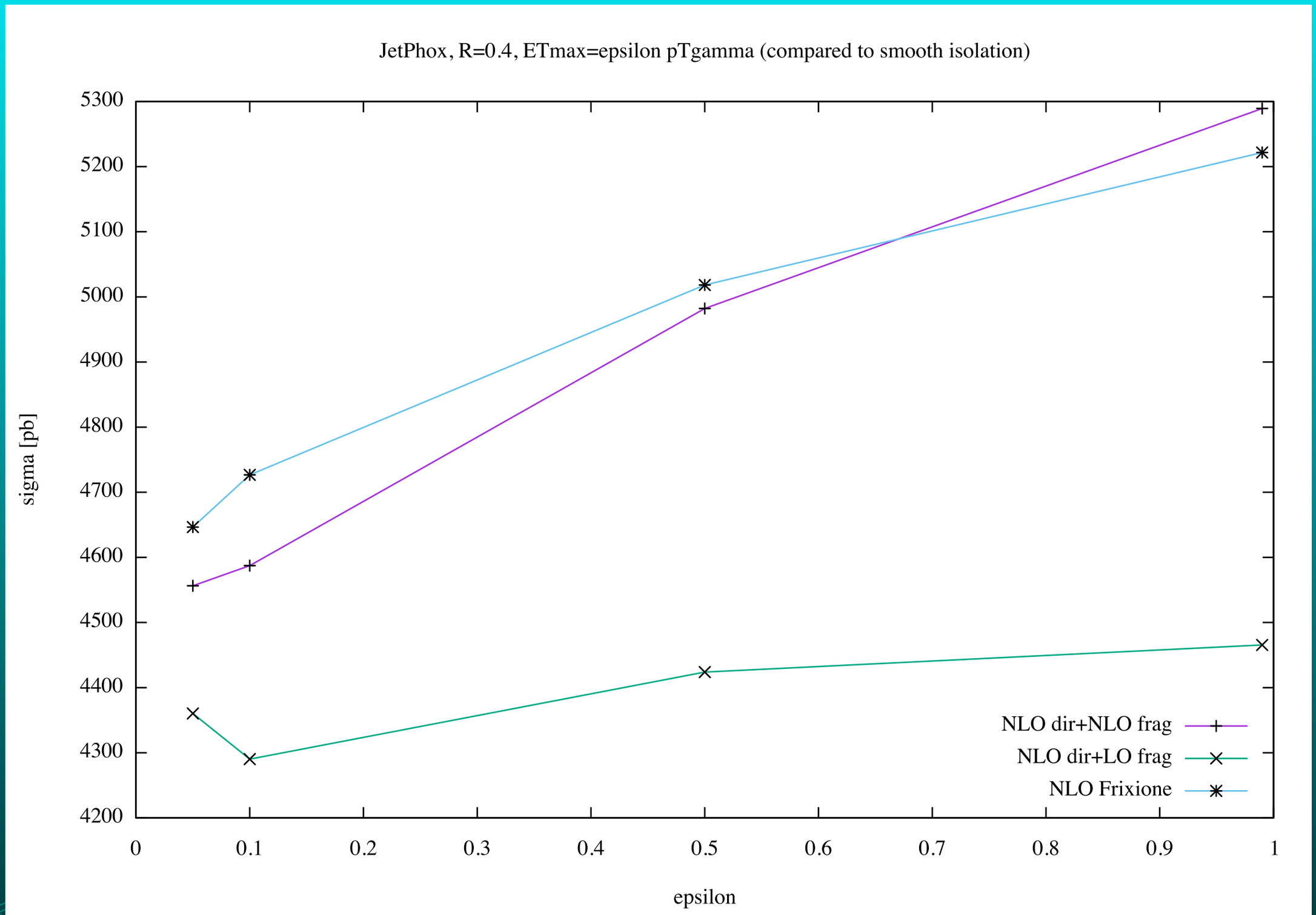
$p_T^{jet} > 40$ GeV

$E_T^{\gamma} > 45$ GeV

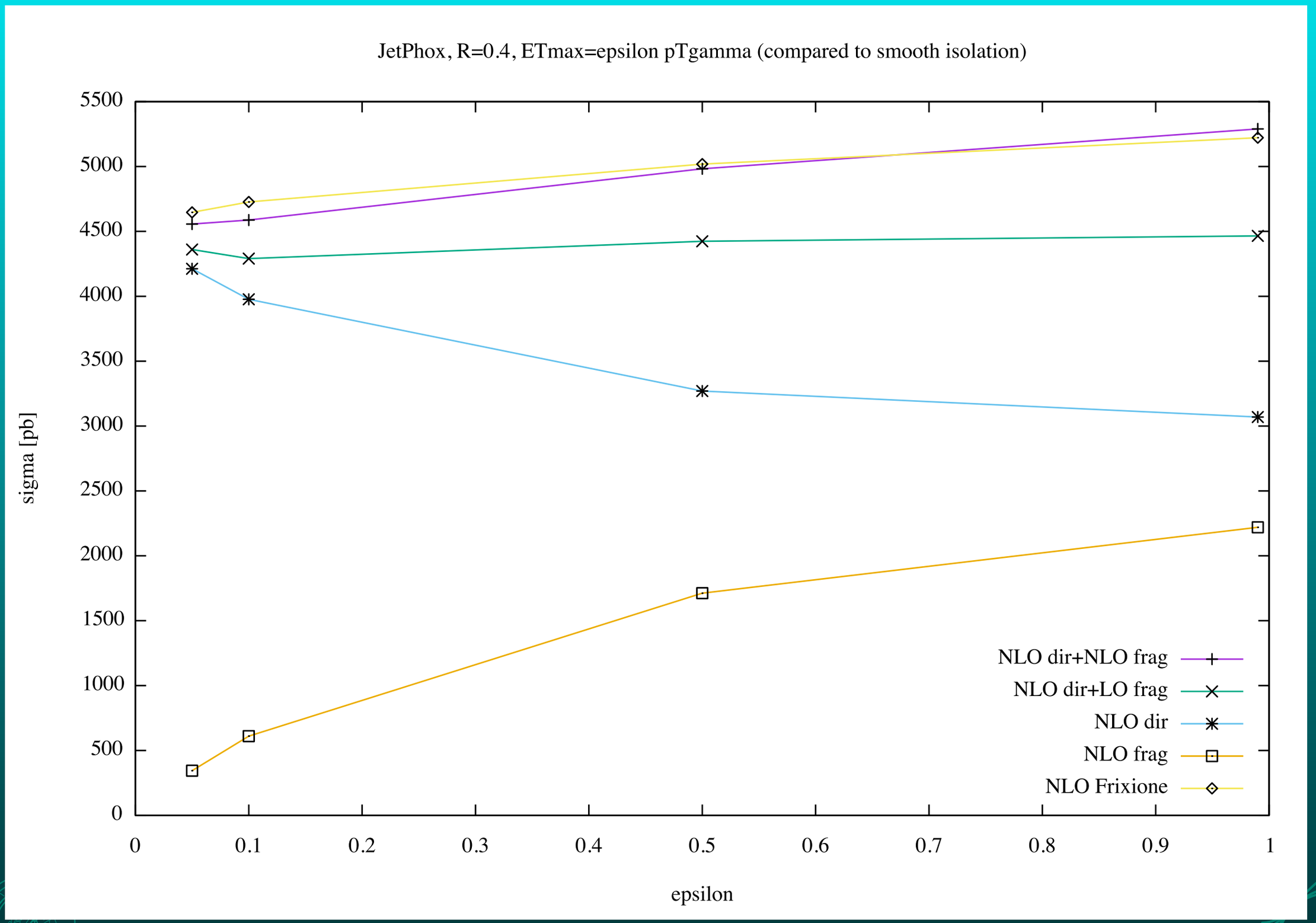
$|\eta^{\gamma} + y^{jet}| < 2.37$

CT10 PDFs

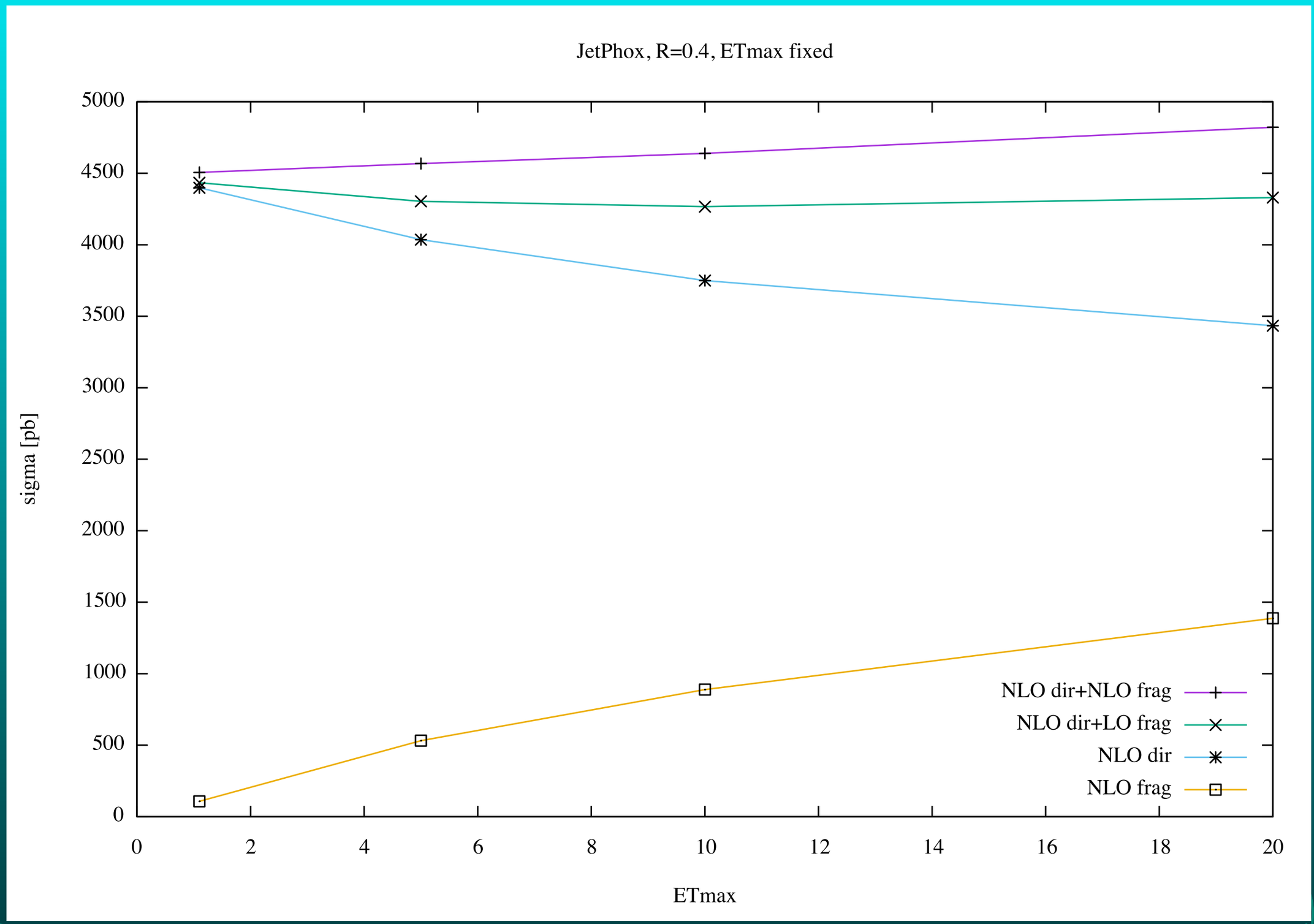
$$E_T^{max} = \epsilon\, p_T^{\gamma}$$



$$E_T^{max} = \epsilon \, p_T^{\gamma}$$



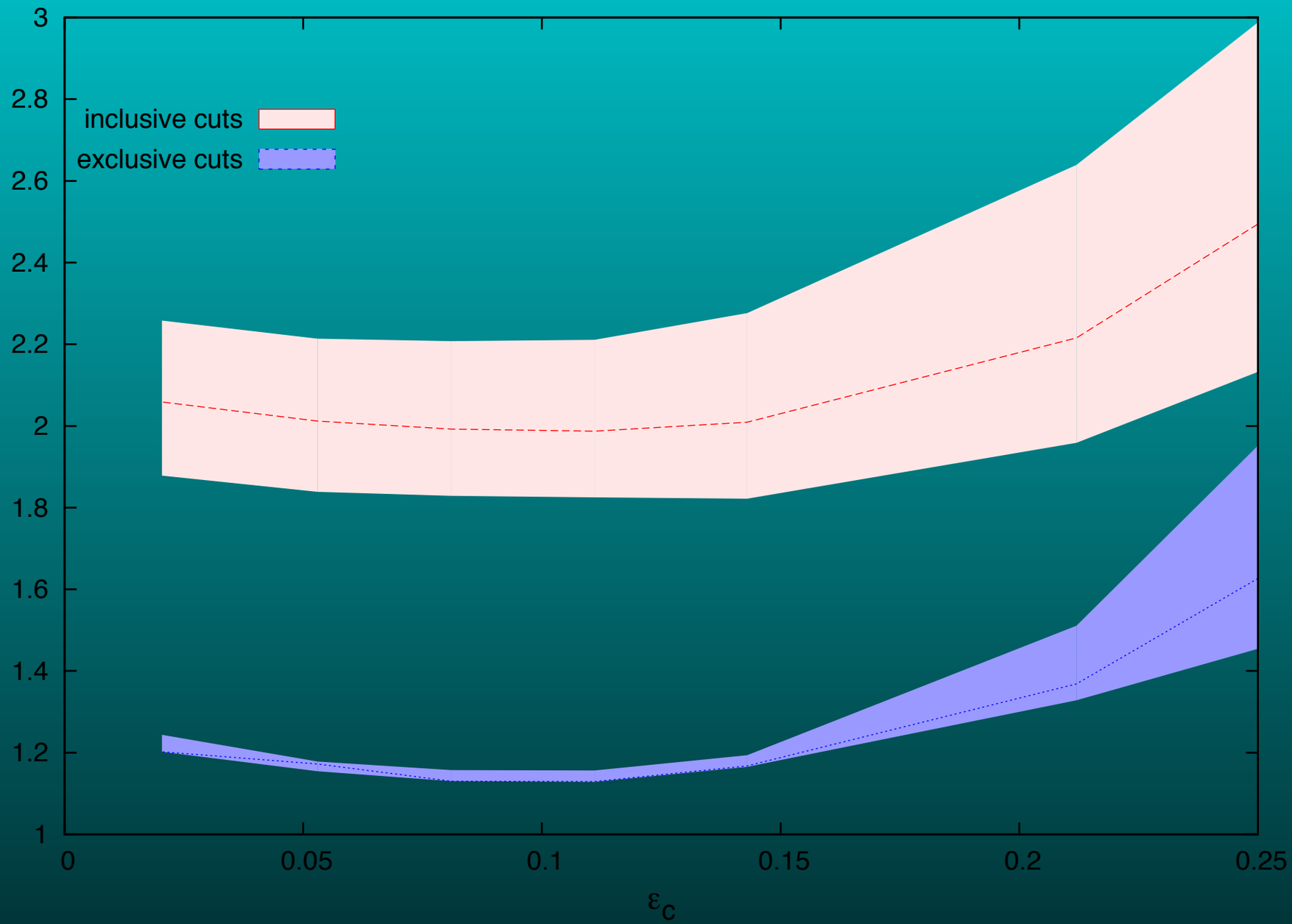
fixed energy ETmax in the cone



diphoton+jet:

[N. Greiner, T. Gehrmann, GH, 1303.0824]

cone isolation:



Frixione isolation: