

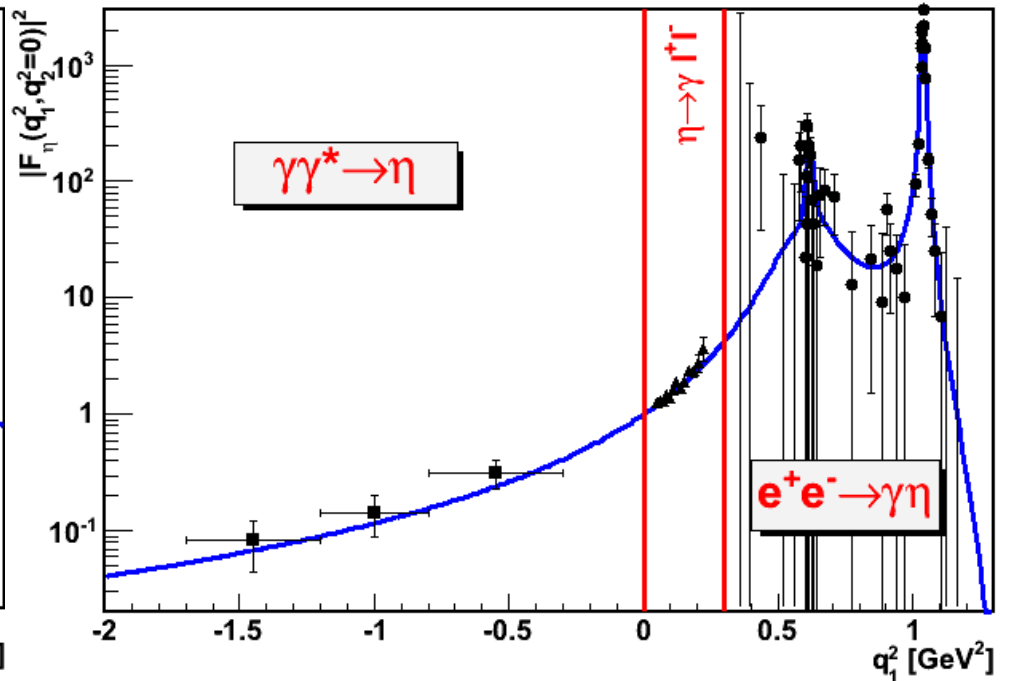
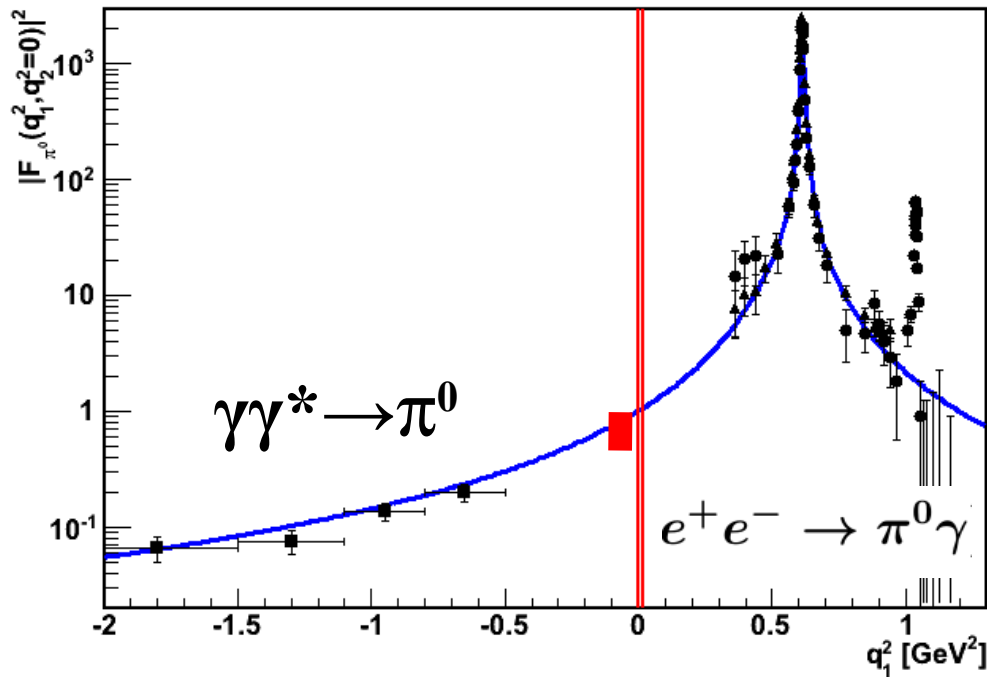
Measurement of time like η and π^0 TFF in ISR

- Event generator (Phokhara)
- Cross section/number of events
- TFF extraction
- Background

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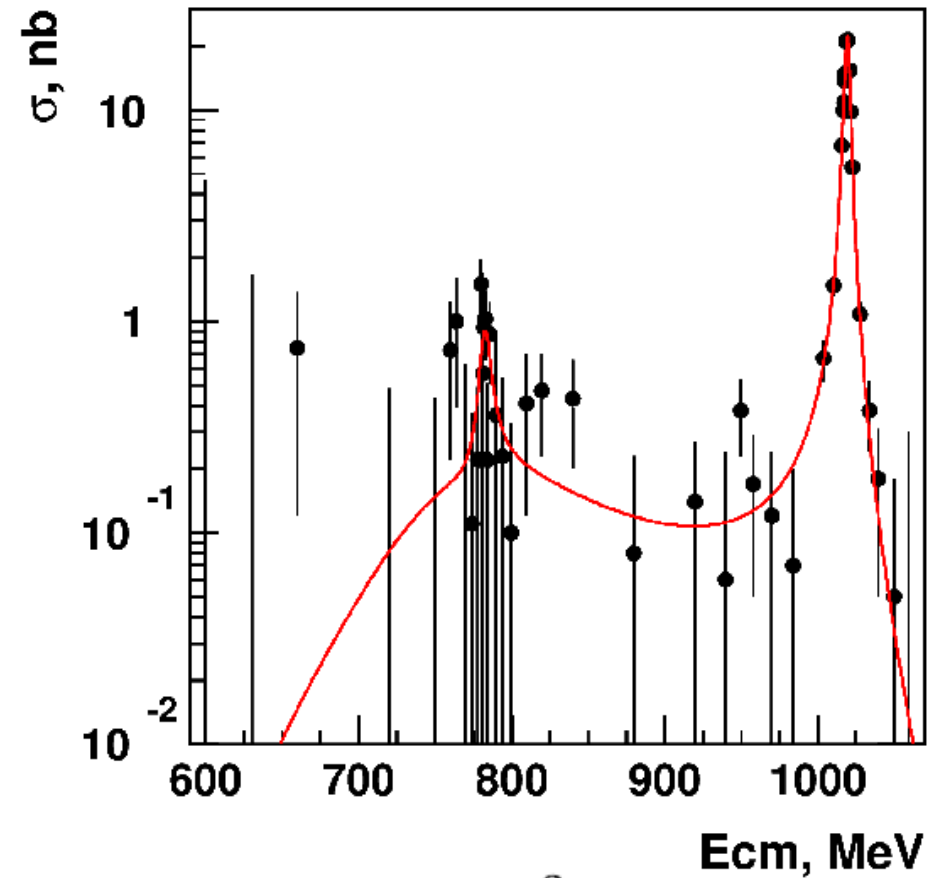
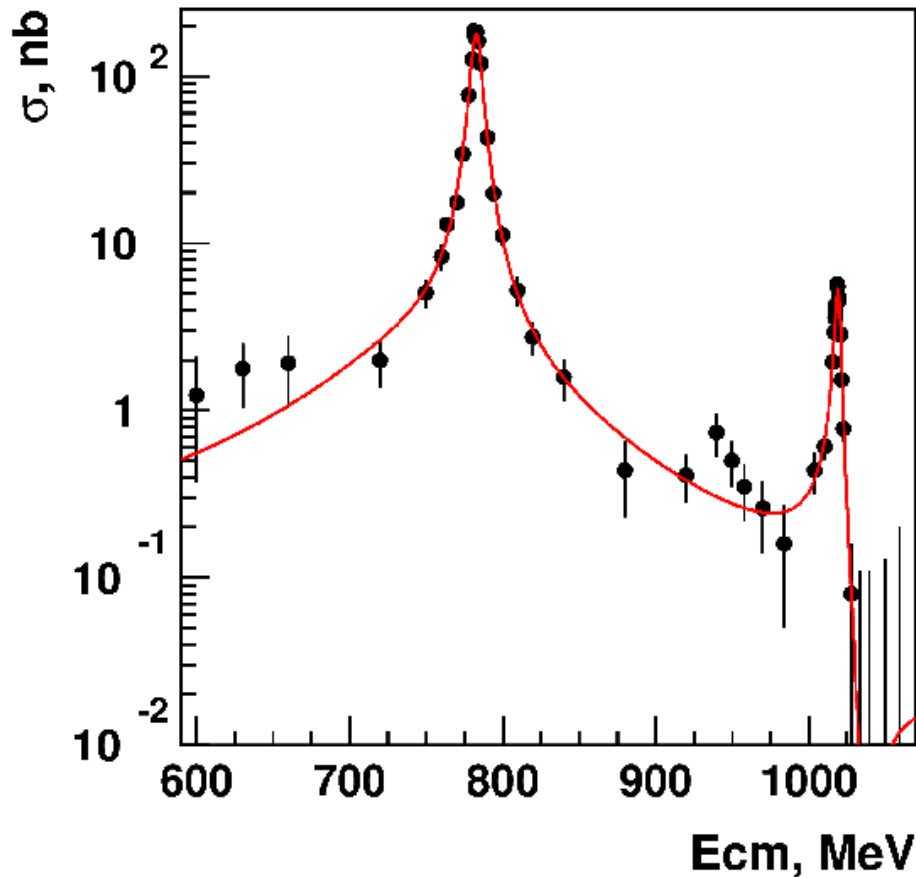
TFF at low q^2



=> $0 < q^2 < 0.6$ GeV $O(100\text{pb})$

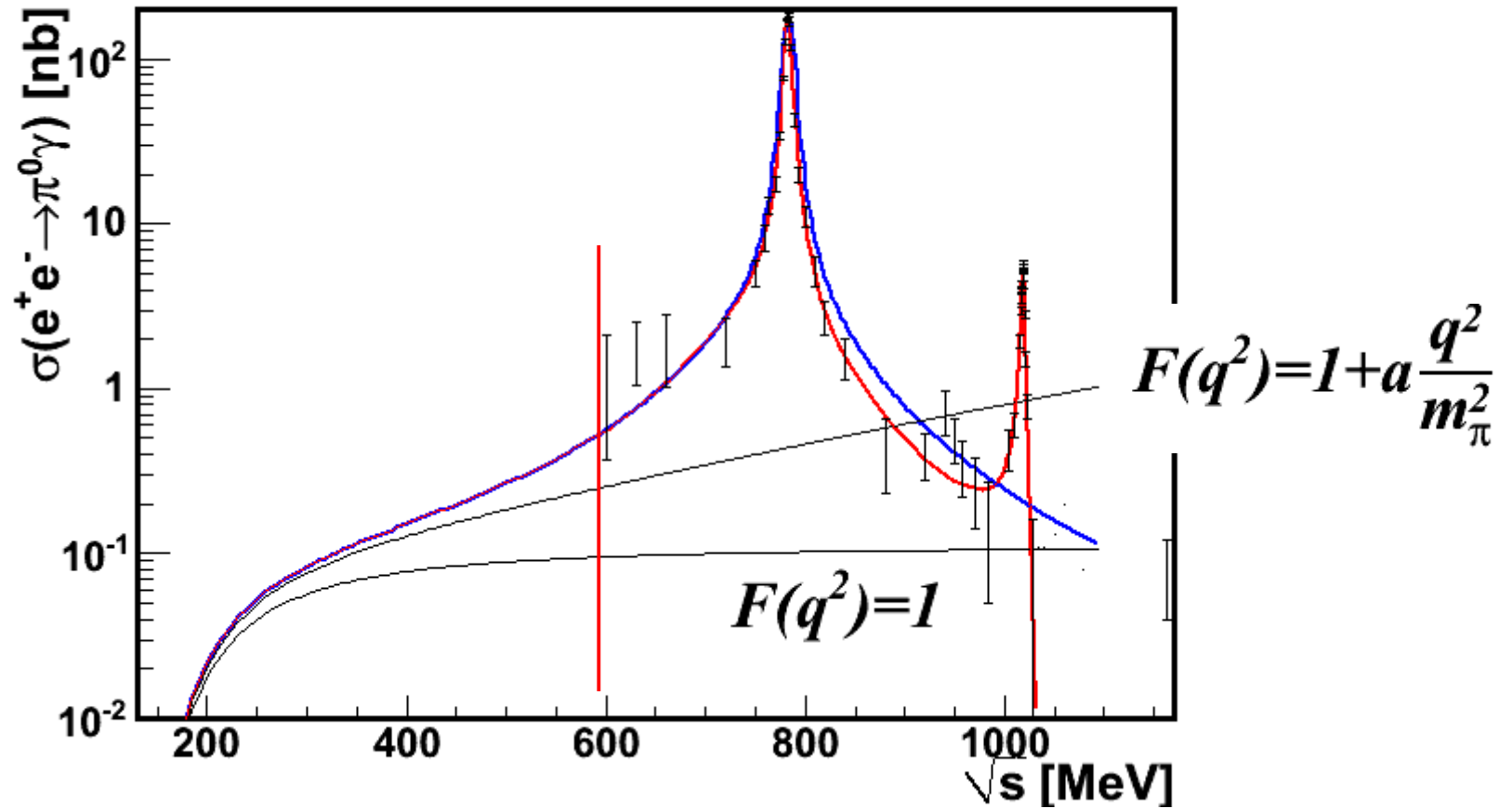
=> TFF (interpolation) ... LbL

$\sigma(e^+e^- \rightarrow \pi^0\gamma, \eta\gamma)$

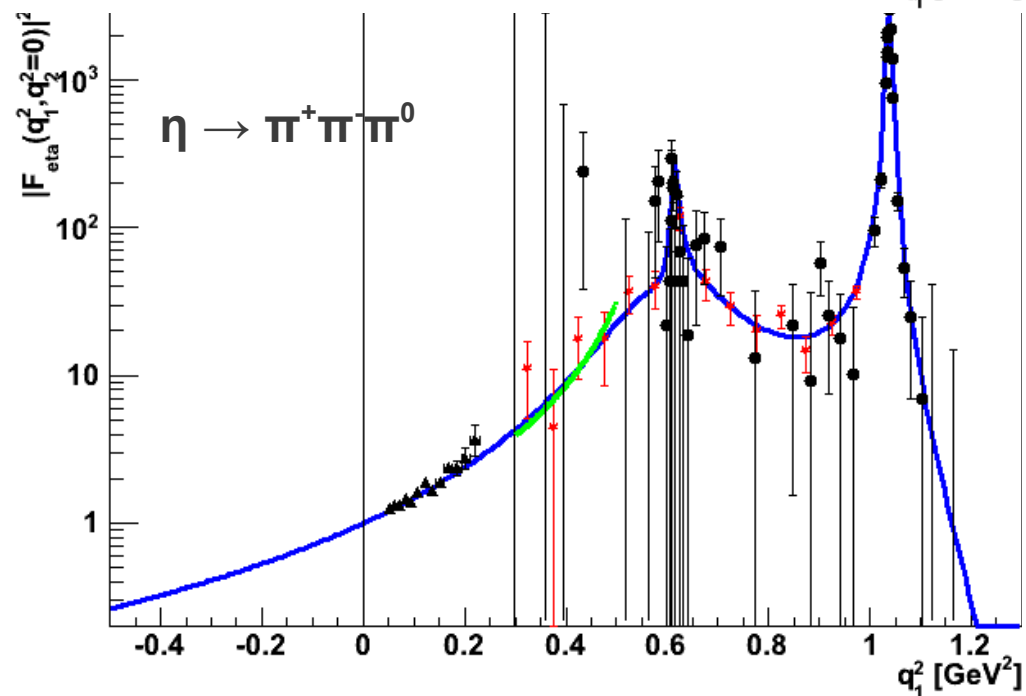
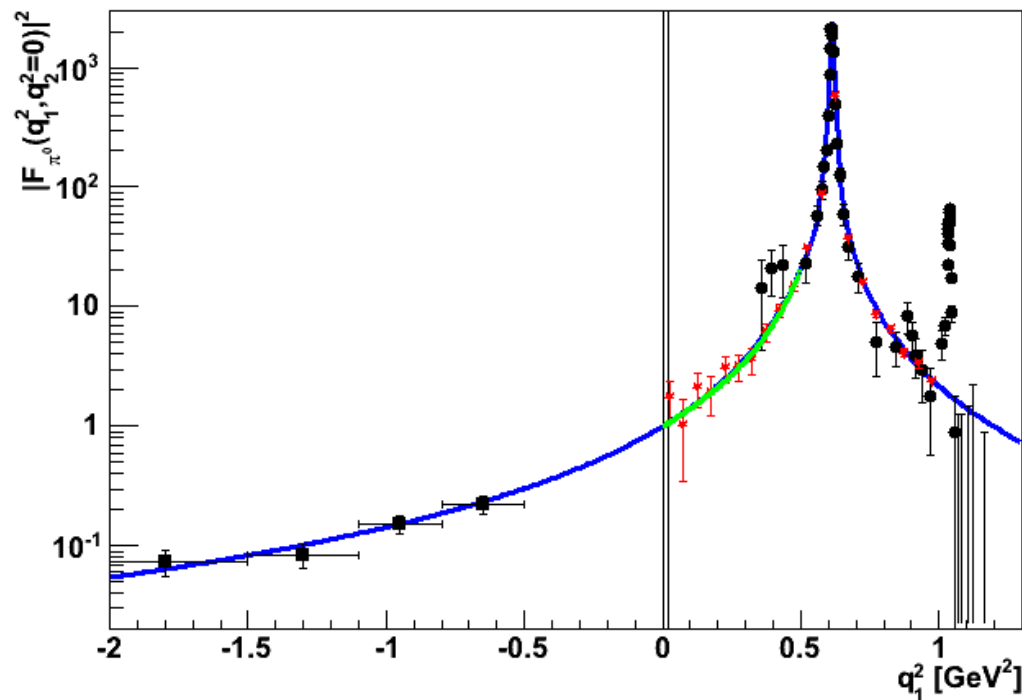
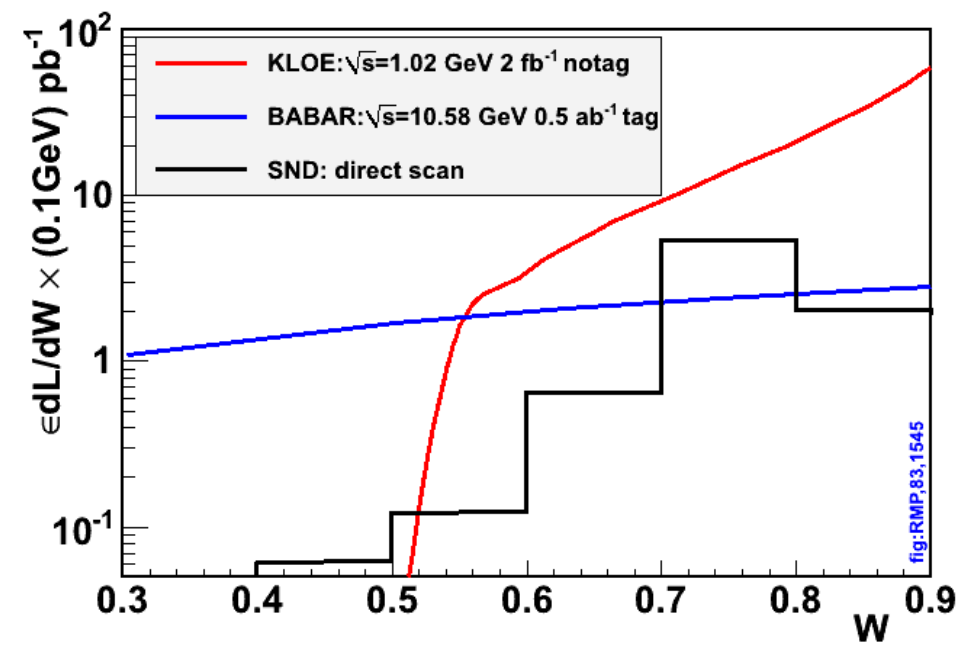
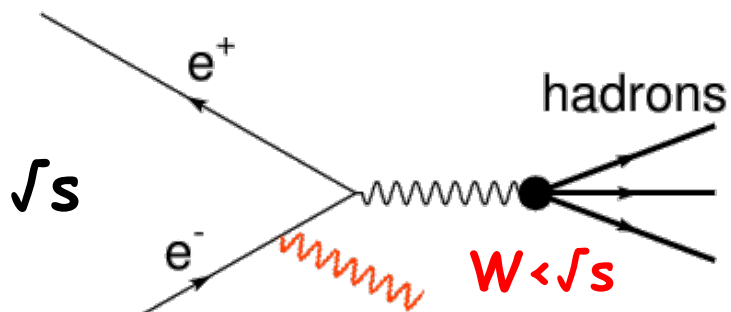


$$\sigma(e^+e^- \rightarrow P\gamma) = 4\pi\alpha\Gamma_{\gamma\gamma}|F_P(s, 0)|^2 \left(\frac{s - m_P^2}{sm_P}\right)^3$$

$\sigma(e^+e^- \rightarrow \pi^0\gamma)$

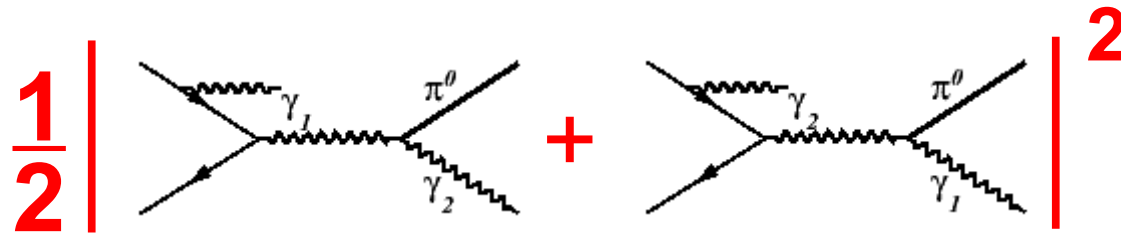


ISR



KLOE 2.5 fb^{-1} v ISR 45° to 135° acc 10%

$e+e- \rightarrow (\pi^0\gamma, n\gamma)\gamma_{ISR}$ in Phokhara



Born term, interference

$$d\sigma = K_1 |F_P(q_1^2, 0)|^2 + K_{12} \text{Re}(F_P(q_1^2, 0)F_P^*(q_2^2, 0)) + K_2 |F_P(q_2^2, 0)|^2$$

Introduced in PHOKHARA via hadronic tensor

→ no interference (but should be small)

not fully tested

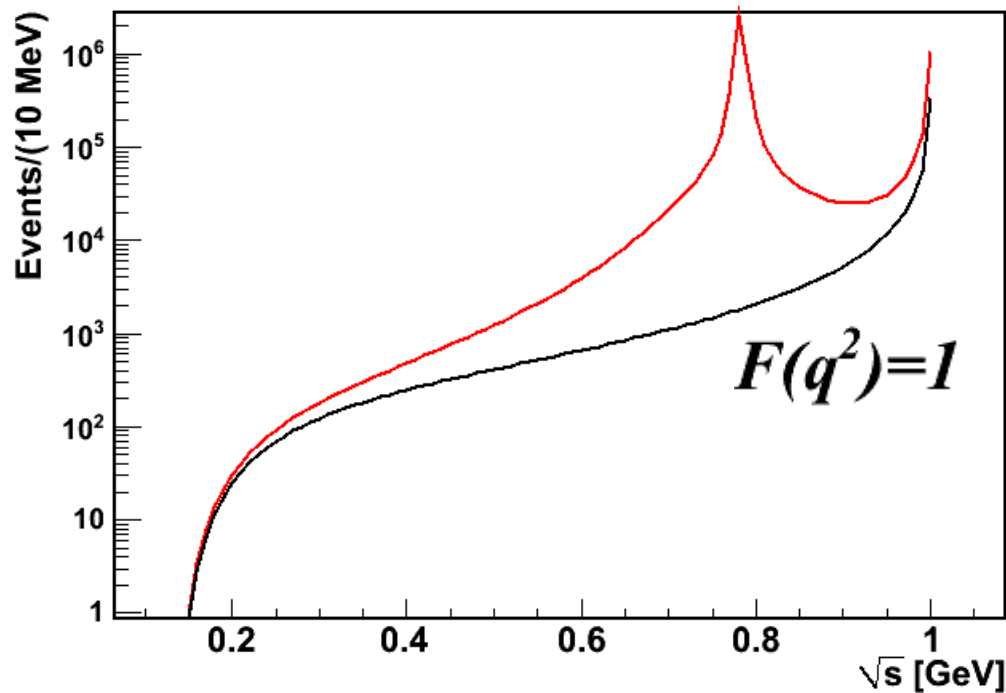
→ can not use 2d TFF from EKHARA (use CMD-2 1d)

→

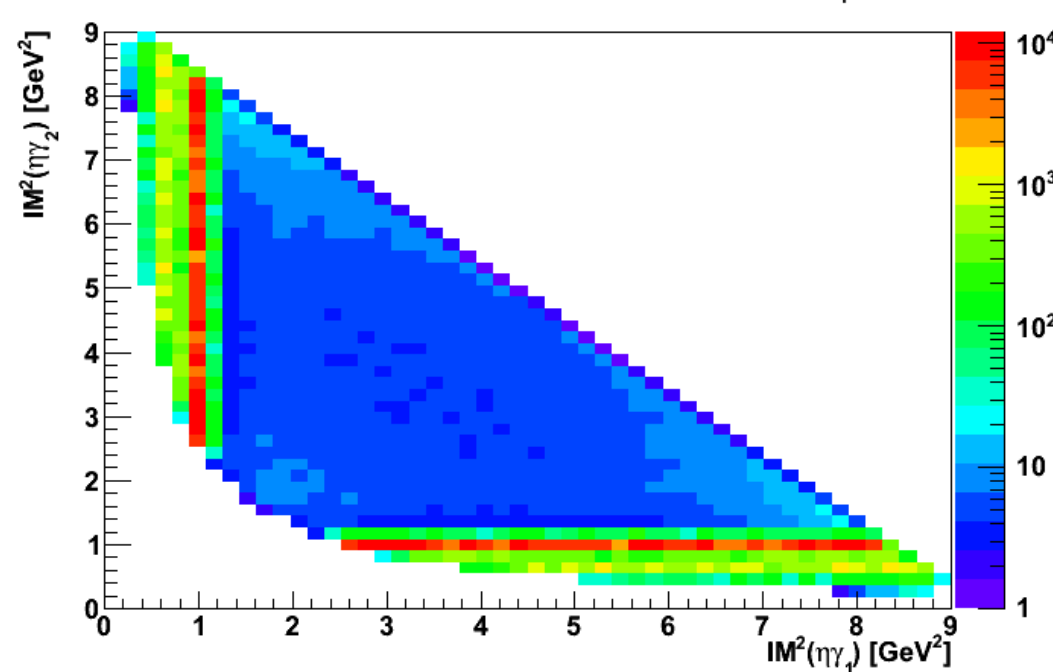
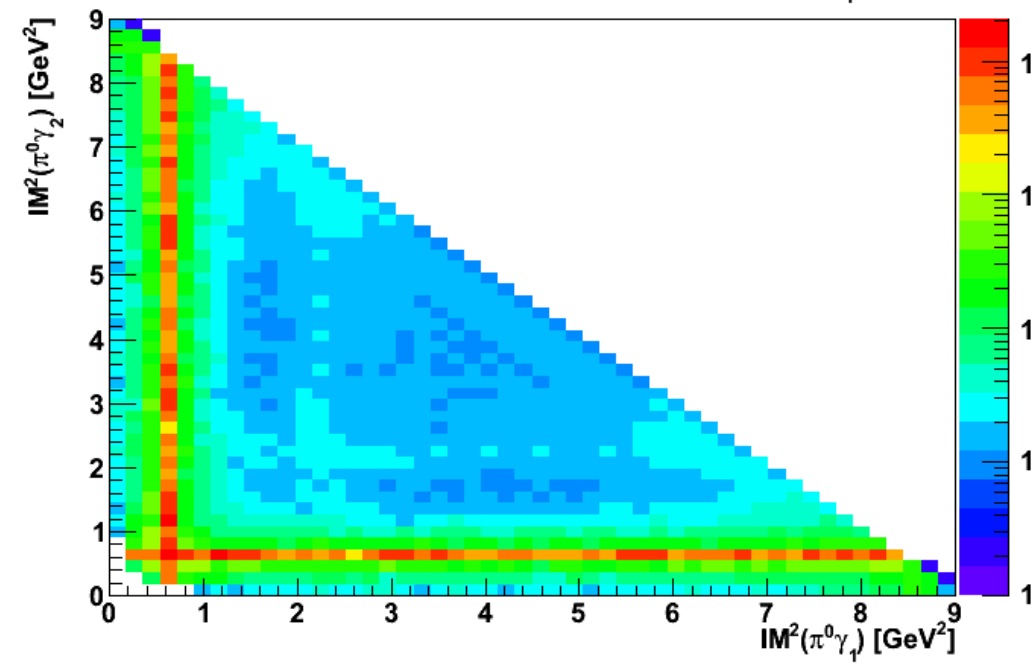
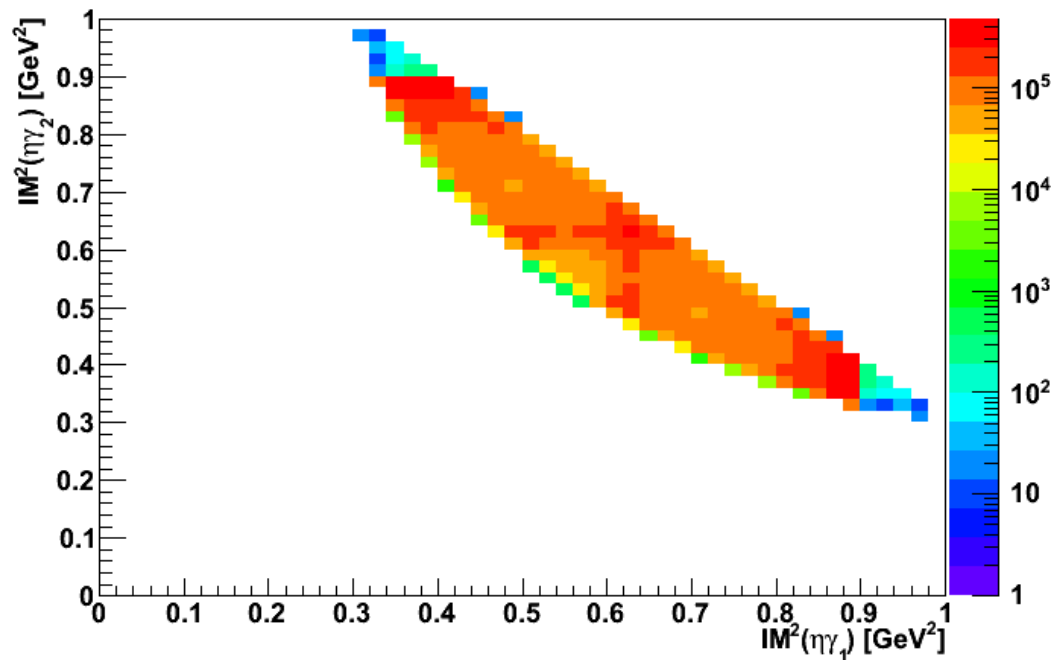
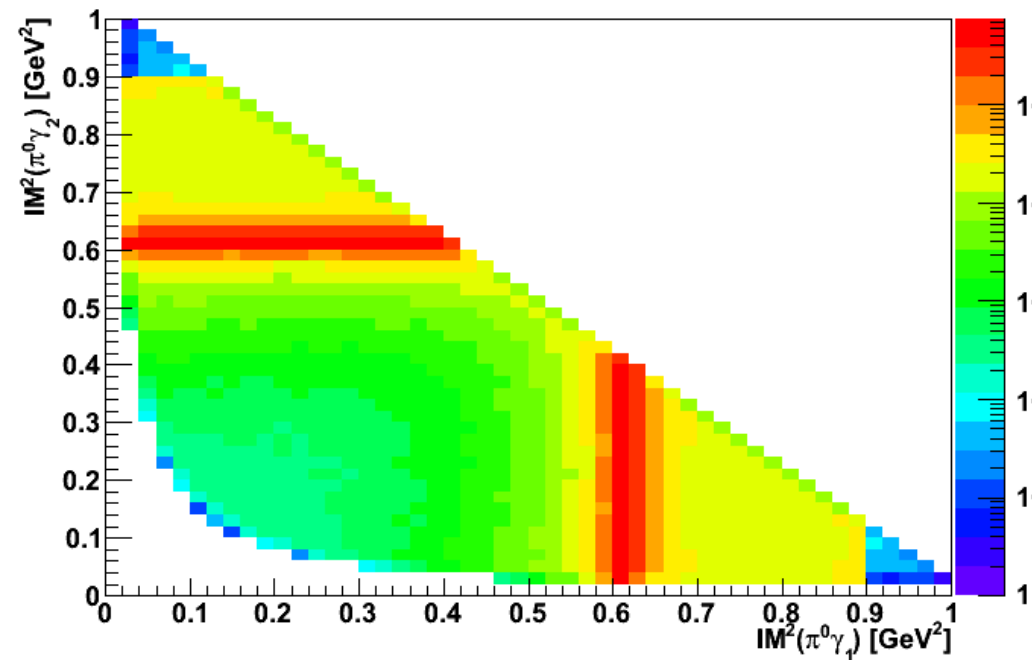
Event rates

ISR σ	$q < 0.7 \text{ GeV}$		T: $30 < \theta < 150$		
	L	σ_U	NU	σ_T	NT
S: 1.0	: 10 fb^{-1}	6pb	61k	1pb	10k
C: 3.77	: 10 fb^{-1}	280fb	2.8k	60fb	0.3k
B: 10	: 0.5 ab^{-1}	44fb	22k	4fb	2.1k

$$e^+e^- \rightarrow \pi^0 \gamma \gamma_{\text{ISR}}$$



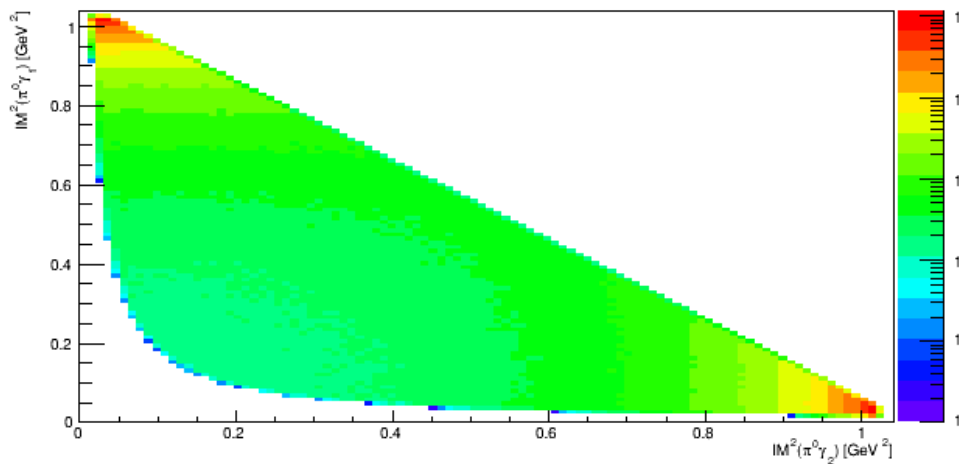
TFF extraction



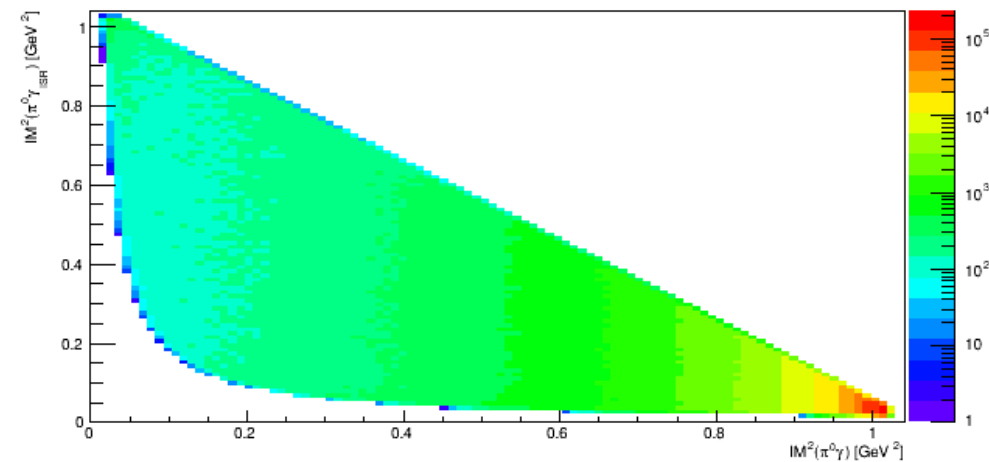
TFF extraction

$$w_0(\theta, x) \approx \frac{\alpha}{\pi} \left[\frac{x}{\tan^2(\theta)} + \frac{1-x}{x \sin^2(\theta)} \right]$$

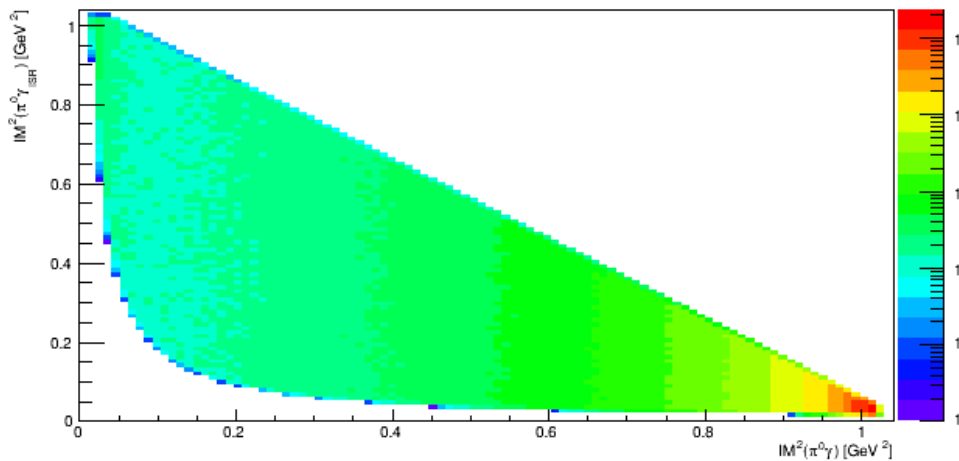
Mix



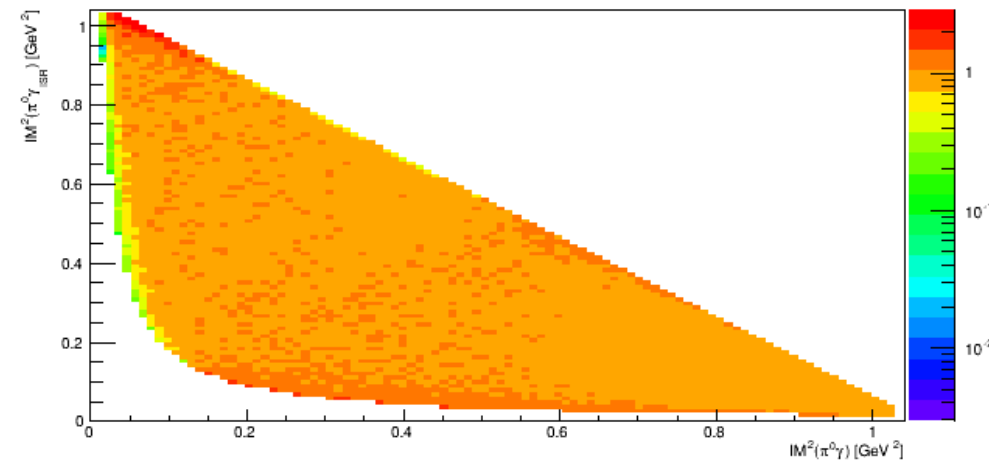
Sorted



Ref

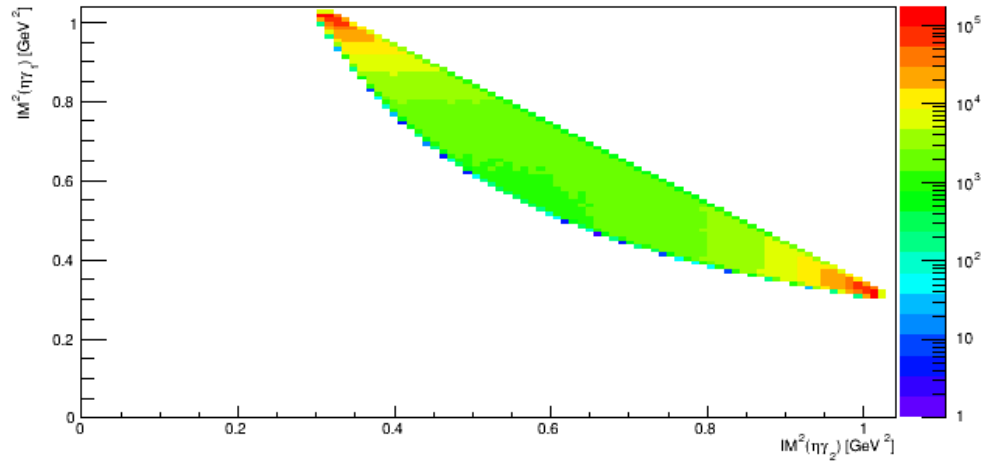


Sorted/Ref

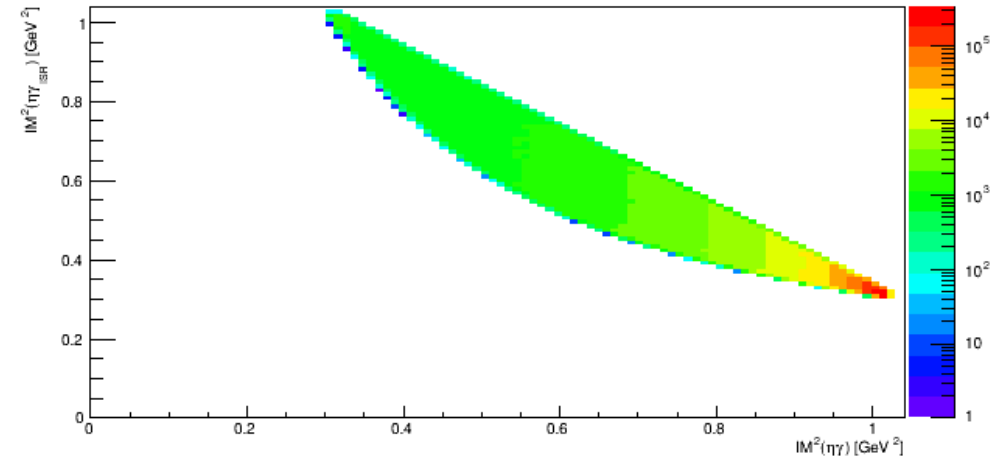


TFF extraction

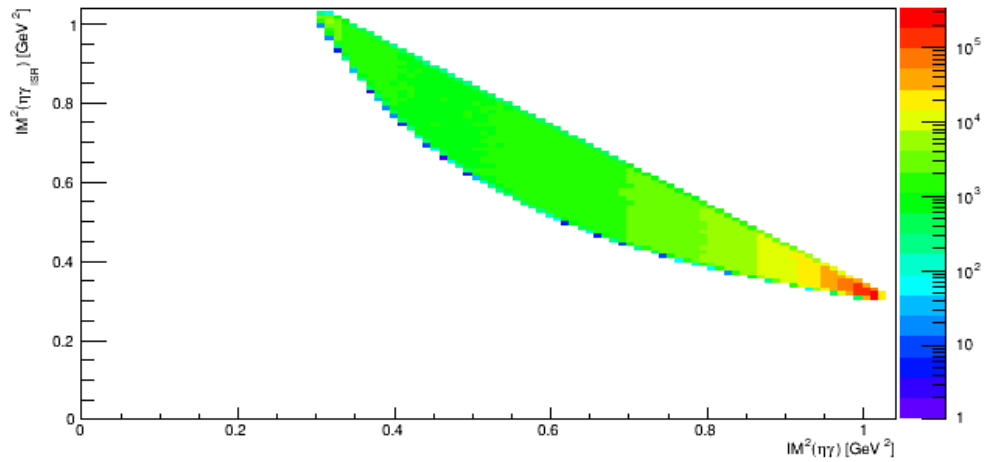
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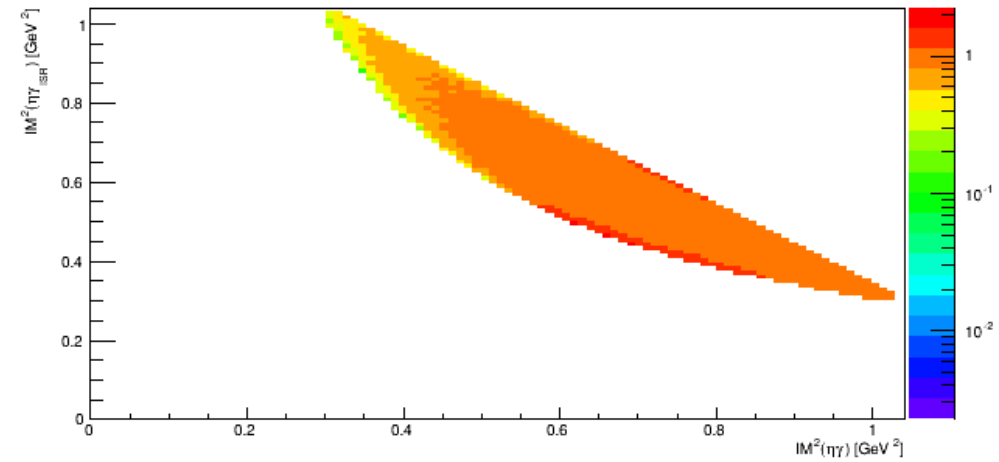
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Ref

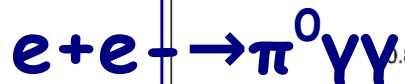
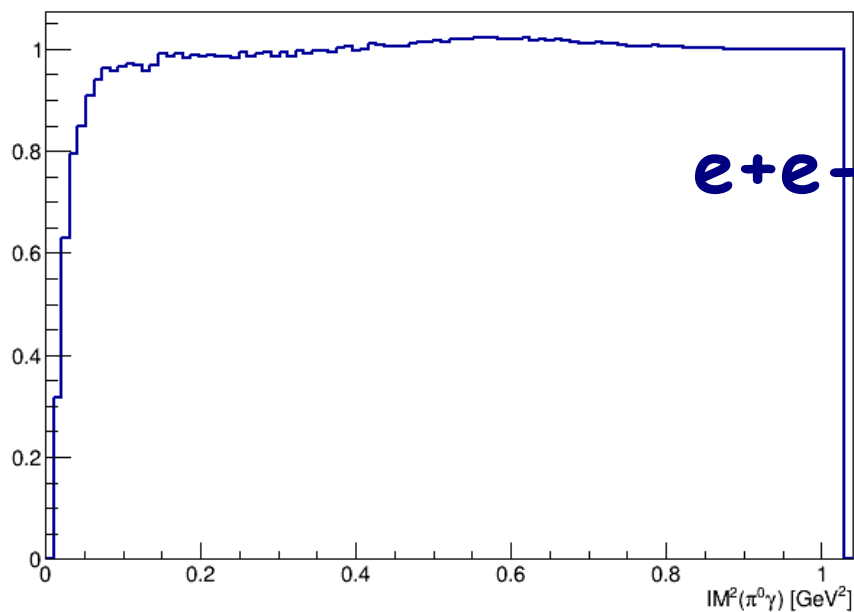


Sorted/Ref

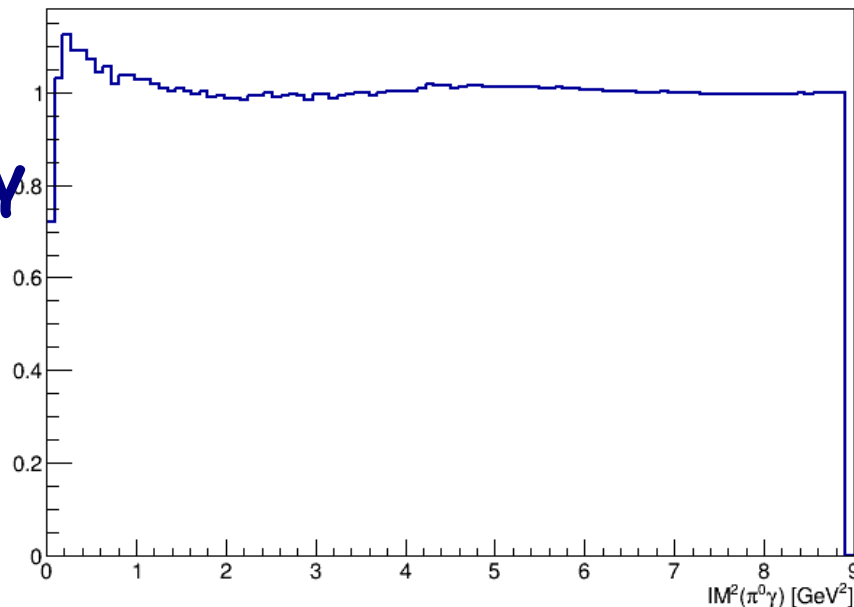


TFF extraction

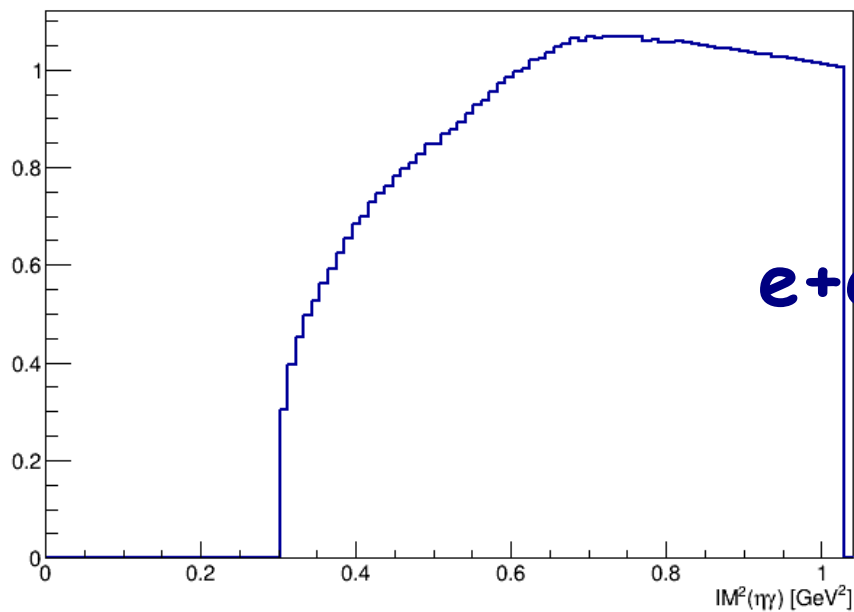
x-projection of sorted/ref



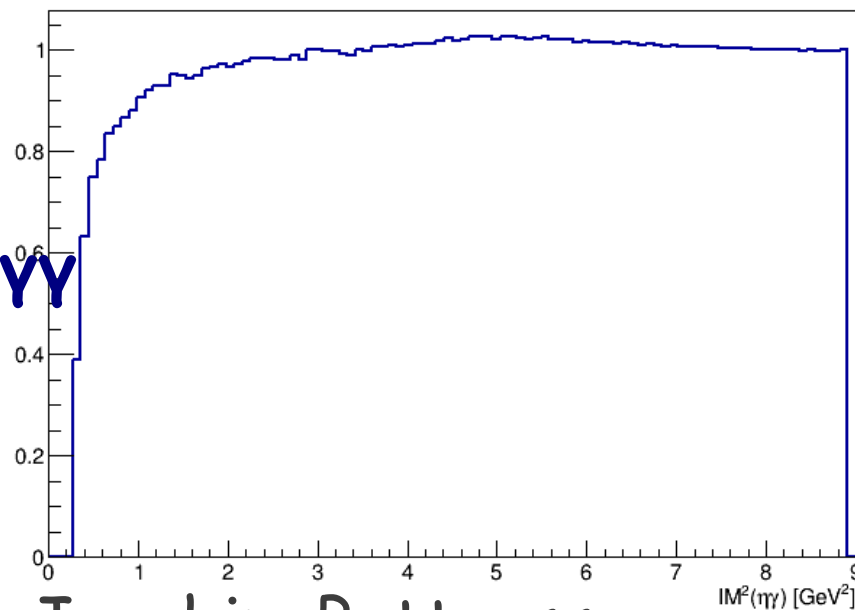
x-projection of sorted/ref



x-projection of sorted/ref



x-projection of sorted/ref



Conclusions/Questions

- ✓ Cross section/number of events
- ✓ TFF extraction
- γ resolution
- Background?
- ISR vs Scan: Integral, Re..