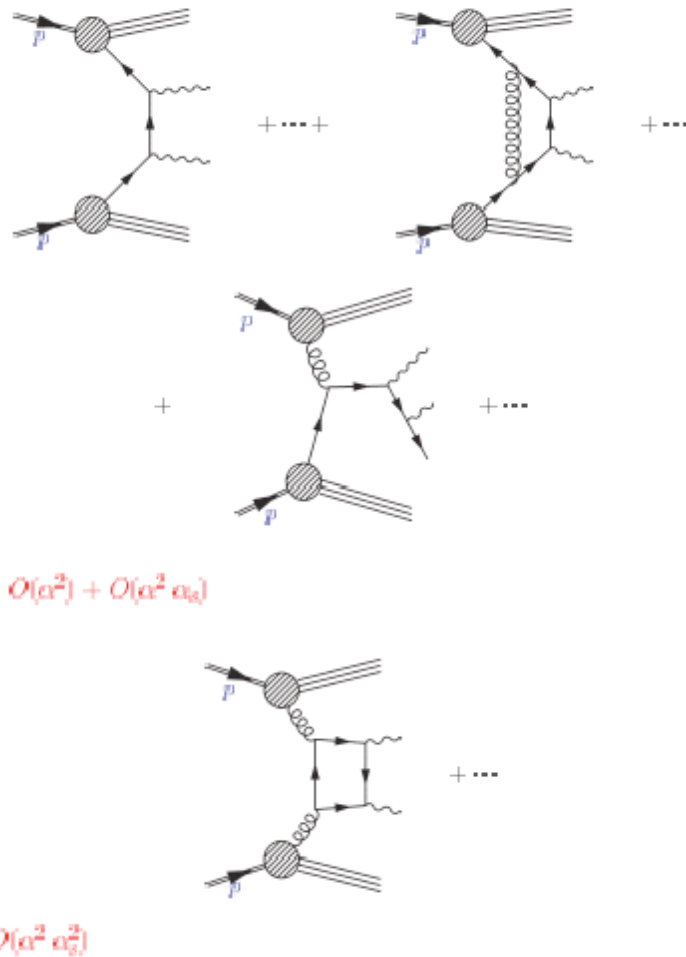
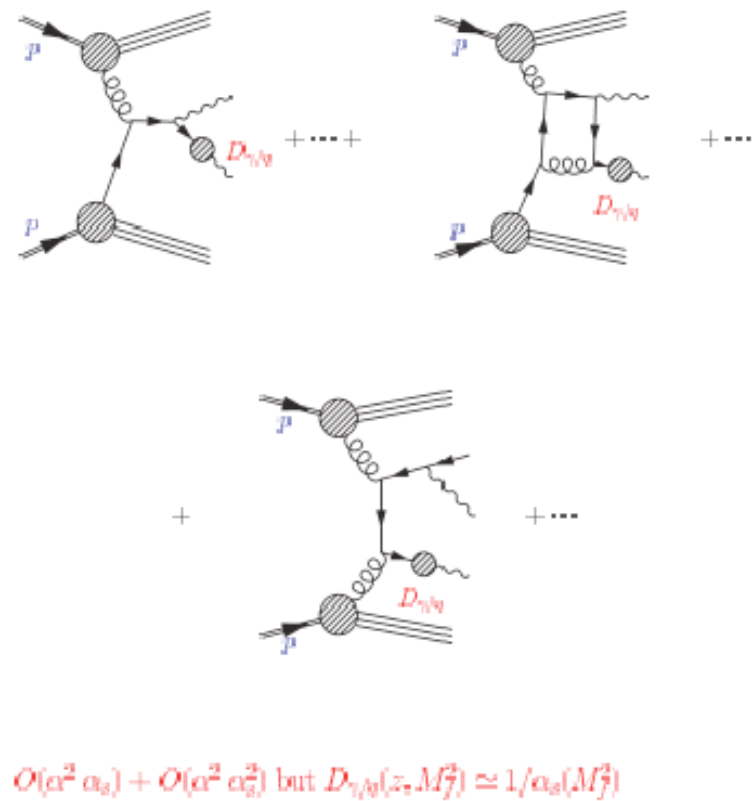


# Diphoton contributions

Direct

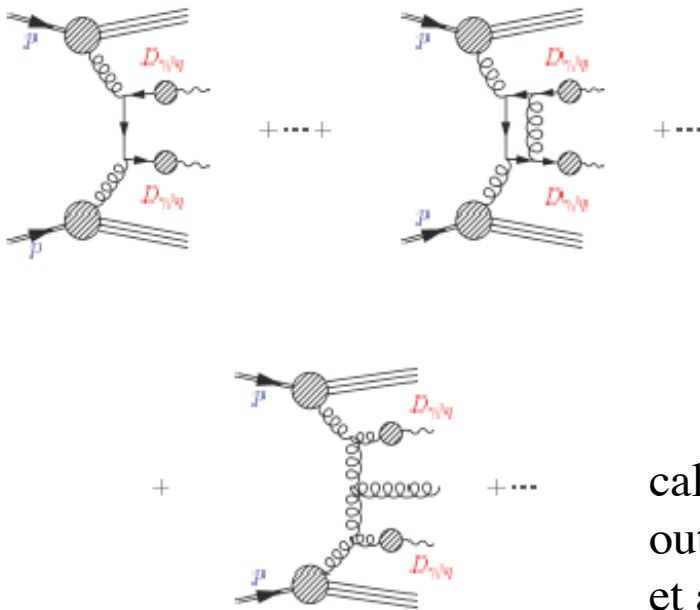


One Fragmentation



# More contributions

## Two Fragmentation

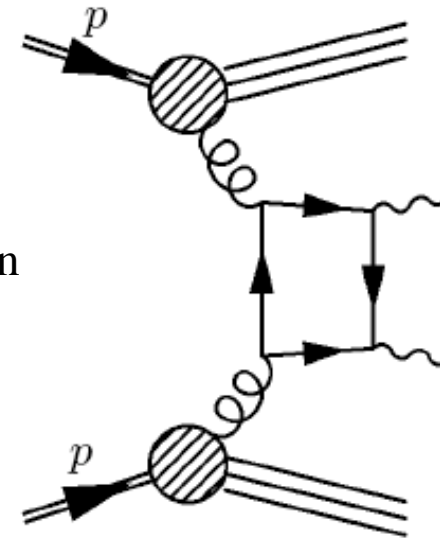


$$O(\alpha^2 \alpha_s^2) + O(\alpha^2 \alpha_s^3)$$

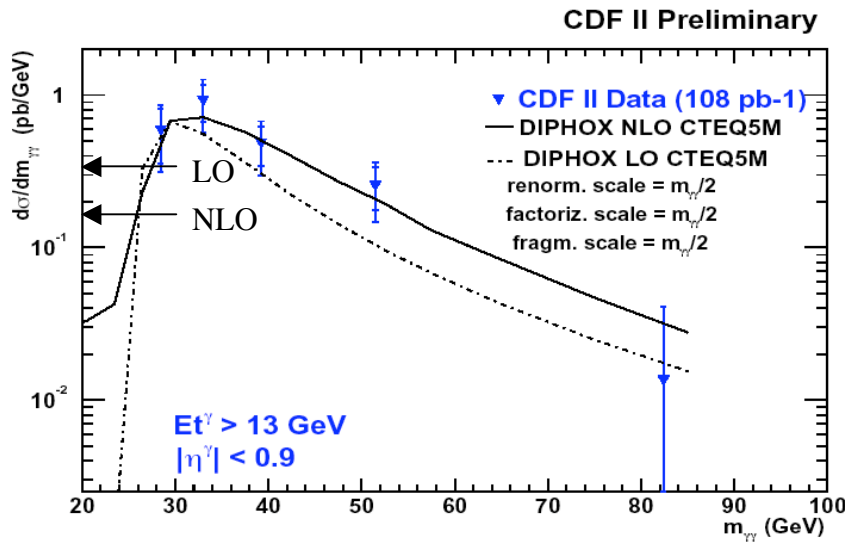
- Box diagram

- ◆ all other subprocesses are calculated at NLO in DIPHOX but box is ?
- ◆ NNLO by  $\square_s$  counting
- ◆ but only LL
- ◆ need loop corrections to put on same level as other DIPHOX contributions

calculation carried out by Carl Schmidt et al for LHC  
re-done for Tevatron



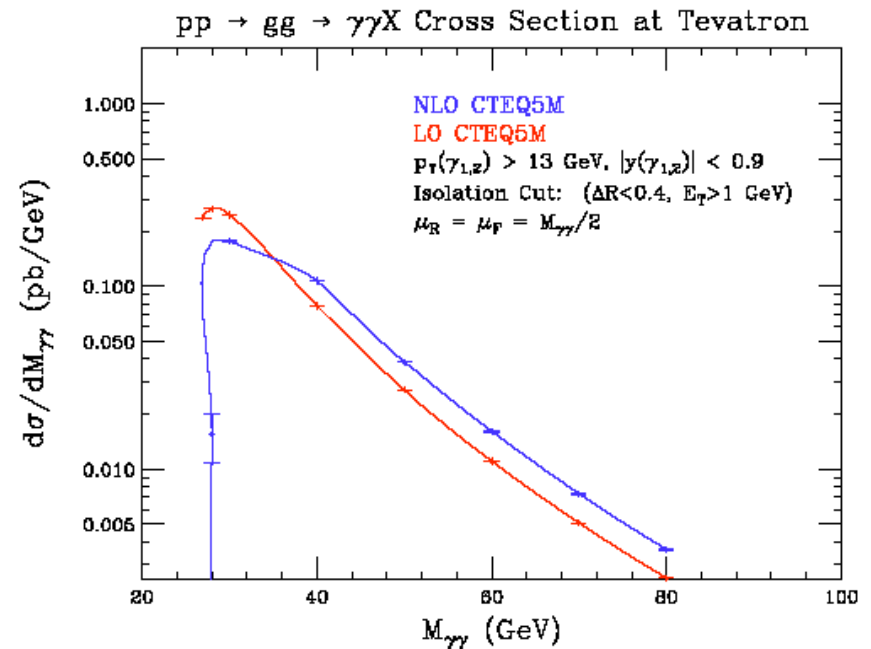
# Loop corrections to box diagram



expect to play a significant role in the high  $k_T$  tail; currently checking

- Suppression near threshold

- ◆ large negative corrections, made worse by symmetric  $p_T$  cut
- ◆ are trying asymmetric cut
- ◆ will add on to DIPHOX w/o box



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