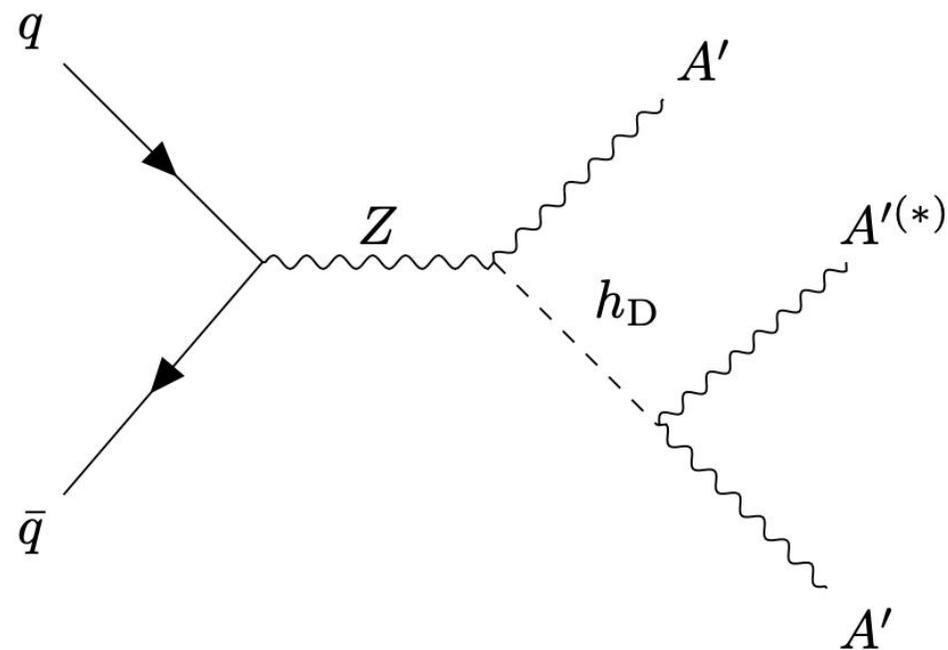
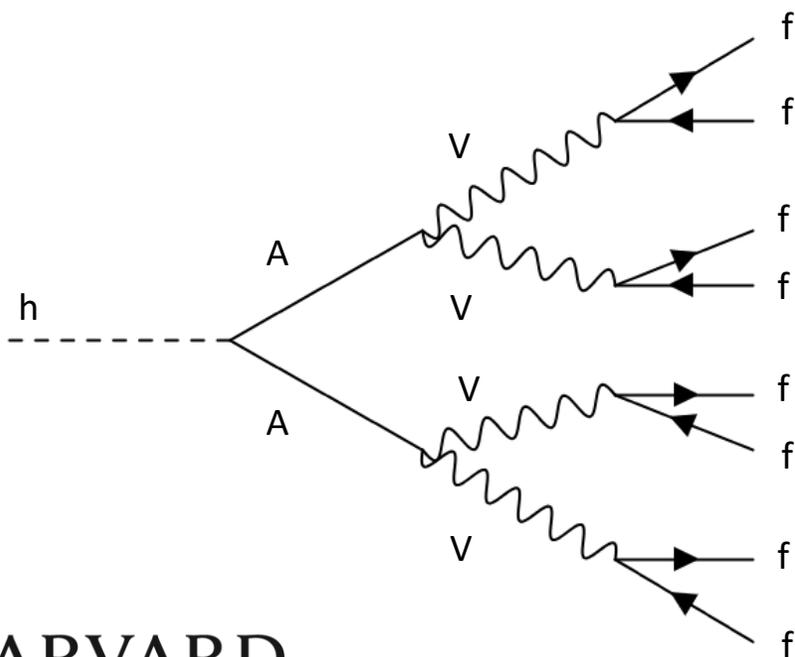
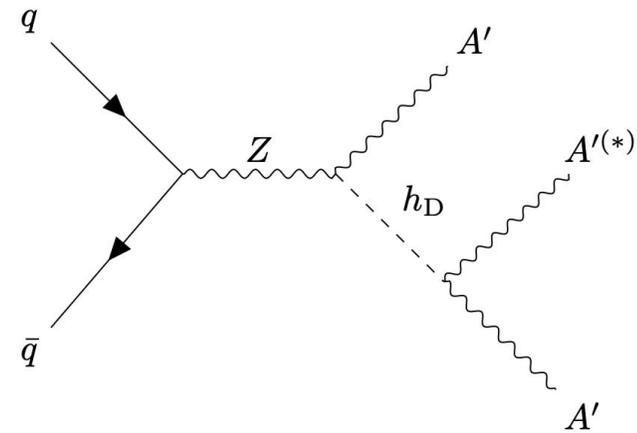
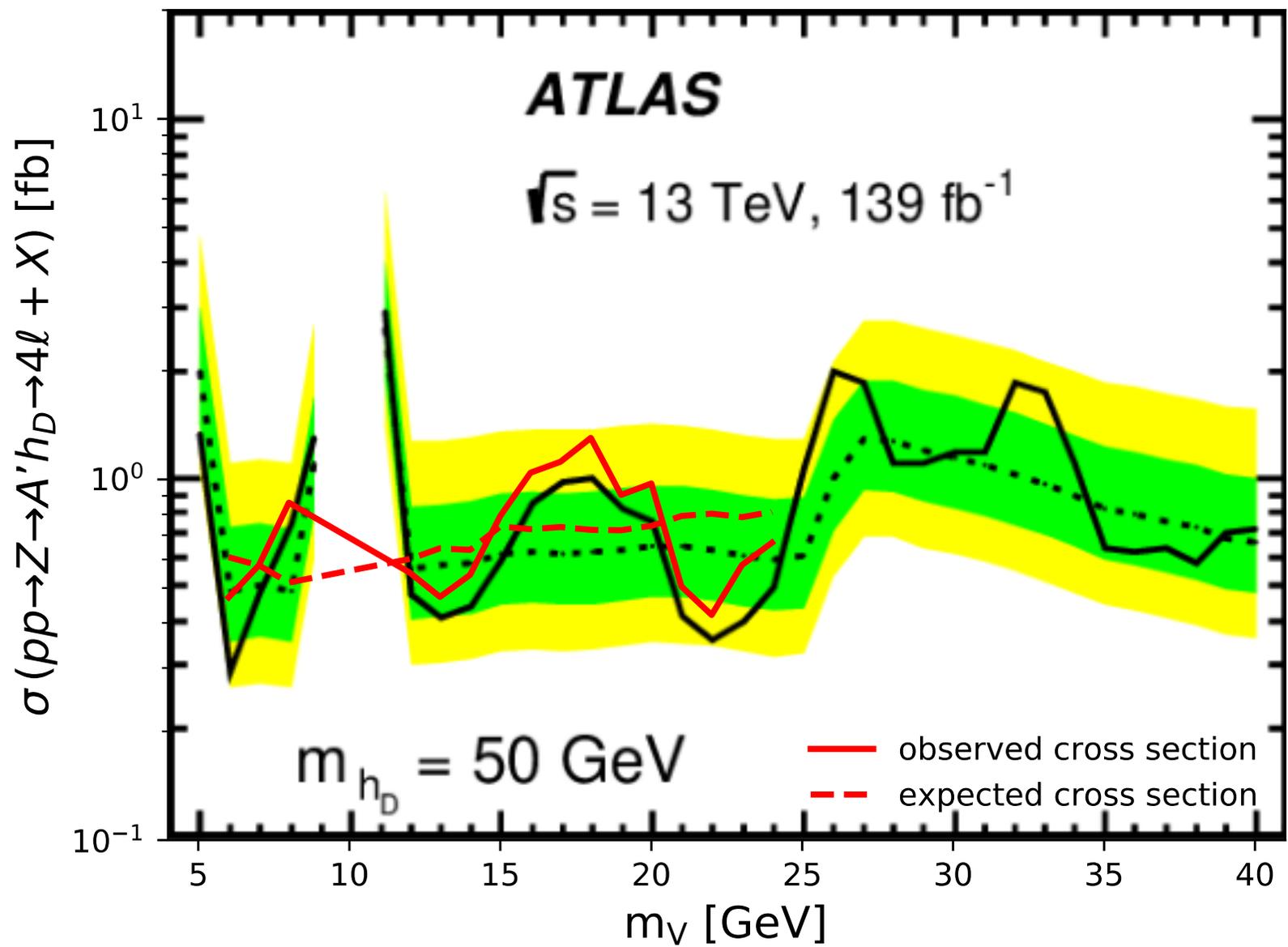


# Exploring Dark Sectors Using Dilepton Resonances

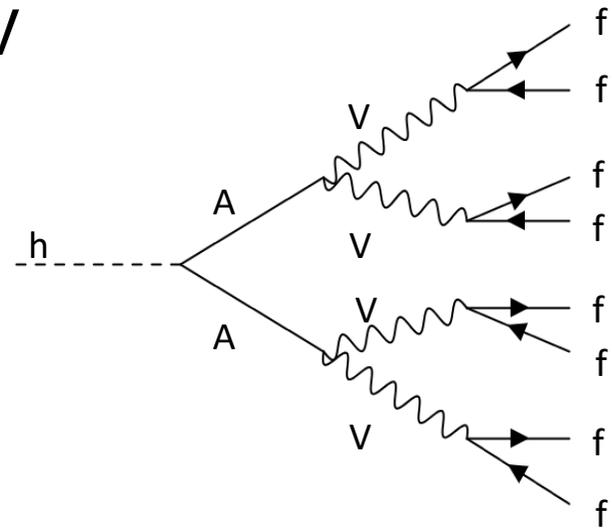
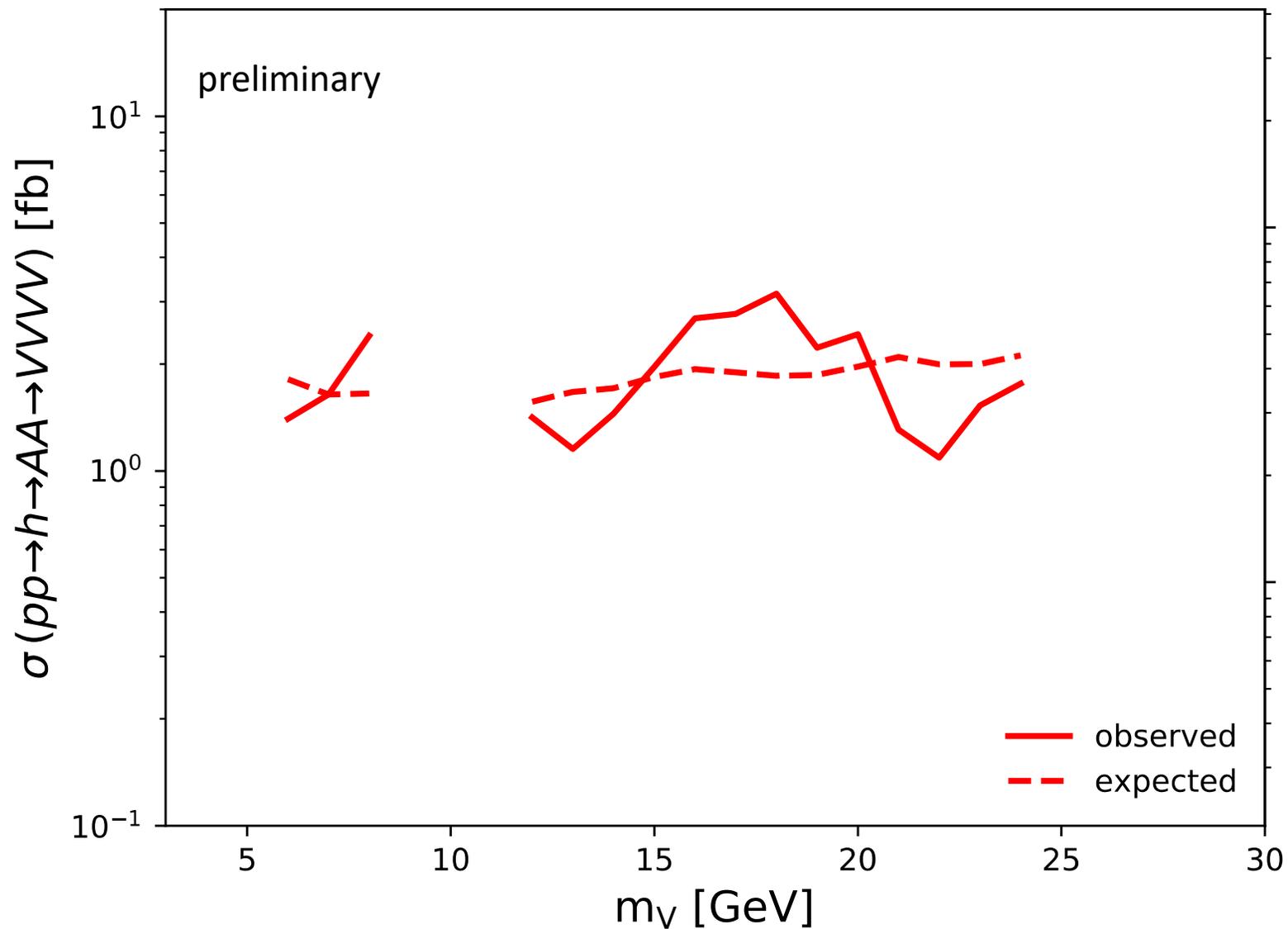
## Probing exotic Higgs decays using multilepton signatures

Rabia Husain in collaboration with Junyi Cheng, Lingfeng Li, and Matthew Strassler

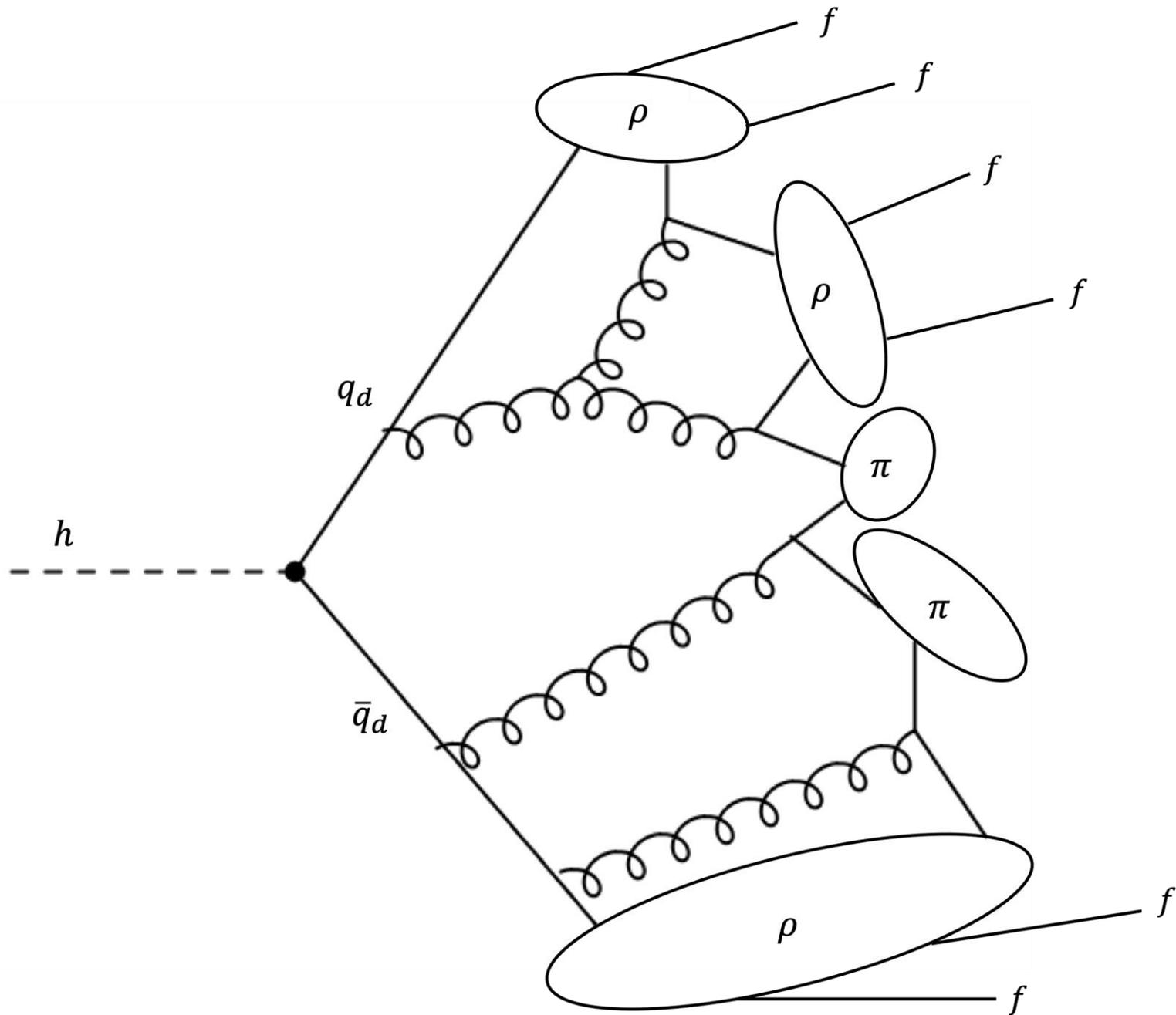




We have put limits below  $10^{-4}$  on the signal  $H \rightarrow A A \rightarrow V V V V$



$\text{Br}(h \rightarrow AA \rightarrow VVVV)$



- All hidden hadrons are SM neutral
- Only  $\rho$  decays to SM
- Hidden  $\pi$  is invisible

Figure modified from  
1907.04346

- $\pm$  labels hidden isospin

# Hidden Valley Models

- A:  $m_H = 125$  GeV, only  $\rho^0$  decaying
- B:  $m_H = 125$  GeV, both  $\rho^0$  and  $\rho^\pm$  decaying
- C:  $m_H = 200$  GeV, only  $\rho^0$  decaying
- D:  $m_H = 200$  GeV, both  $\rho^0$  and  $\rho^\pm$  decaying
- E:  $m_H = 400$  GeV, only  $\rho^0$  decaying
- F:  $m_H = 400$  GeV, both  $\rho^0$  and  $\rho^\pm$  decaying
- G:  $m_H = 1000$  GeV, only  $\rho^0$  decaying
- H:  $m_H = 1000$  GeV, both  $\rho^0$  and  $\rho^\pm$  decaying