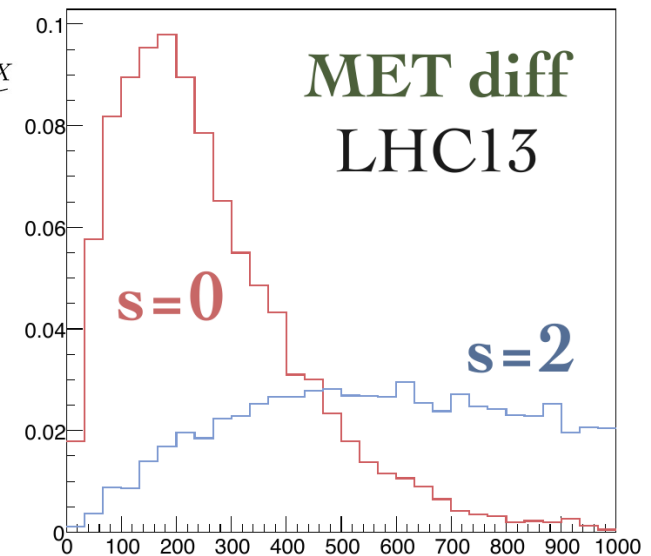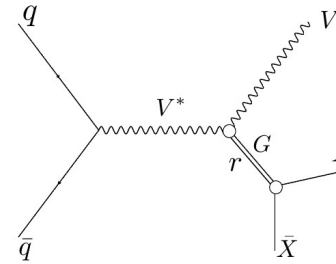# Spin-2 mediators

Mawatari et al. 1603.03421, 1601.05729
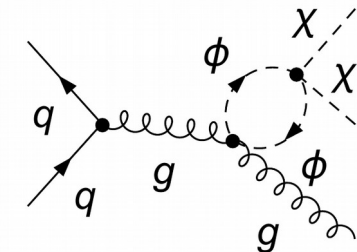
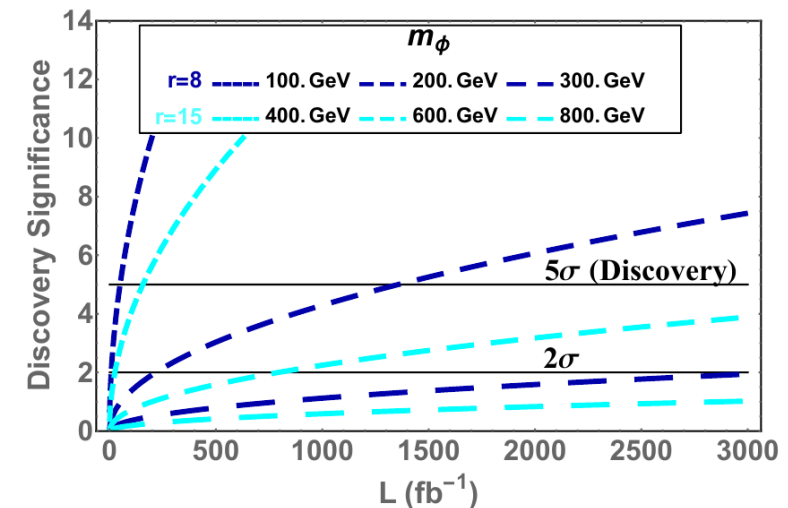Sanz et al. 1306.4107, 1401.5301

- Appear in theories of extra dimentions (KK graviton) and strong interactions (glueballs)

- MC implementation used to explore LHC phenomenology

- Generally harder MET spectra vs spin-0,1

Gluphillic scalar mediators

Godbole et al. 1506.01408, 1605.04756

- Colored mediators at tree-level, possibly long-lived

- Monojet, dijet, top-enriched signatures
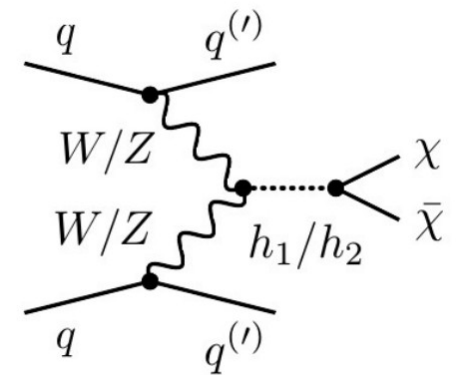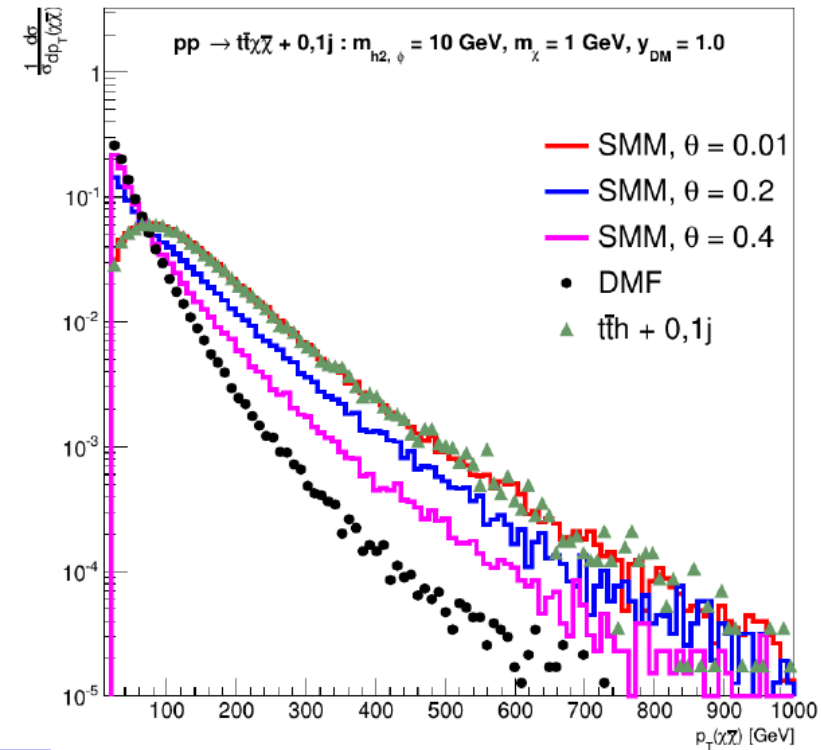
- Monojet sensitive at the HL-LHC

Singlet Model with Mixing (SMM)

1607.06680, see also G. Busoni, DMF mono-H

- Simplest extention of DMF scalar models to include mediator/higgs mixing

- Kinematics & cross sections differ wrt DMF, new VB mediated processes

- Proposal to include the SMM as a DMWG benchmark model
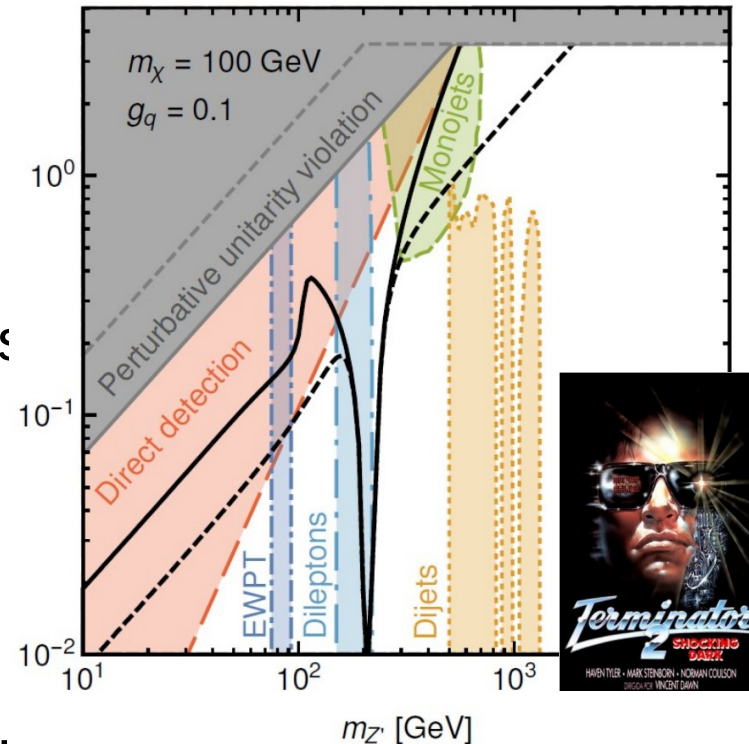 - using $\sin\theta = 0.4$, yDM = 1.0

More complex simplified models ...

Two Mediator Dark Matter (2MDM)

Kahlhoefer et al. 1606.07609

- Spin-0 (dark Higgs) and spin-1 mediators terminators

- Provides comprehensive means of interpreting LHC DM signals

- Can relax relic density constrains

- New phenomenology: DH + Z', h → 2DH

Two Higgs Double Models (2HDM)

See talk from G. Busoni

- Less restrictive than simple SMM

- Can incorporate pseudoscalar mediator

- Large parameter space, enhanced couplings to bottom, tau at high tanβ

Proposing to organize an effort within LHC DMWG to explore parameter space of 2HDMs

Team can present recommendations in terms of benchmark models and parameters on timescale of the next LHC DM WG meeting