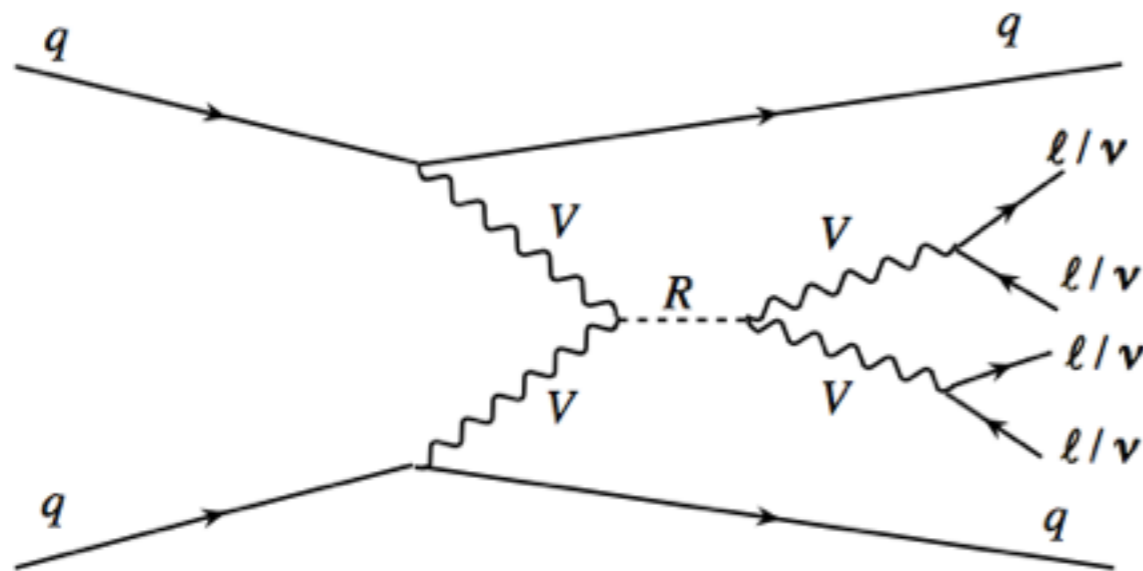


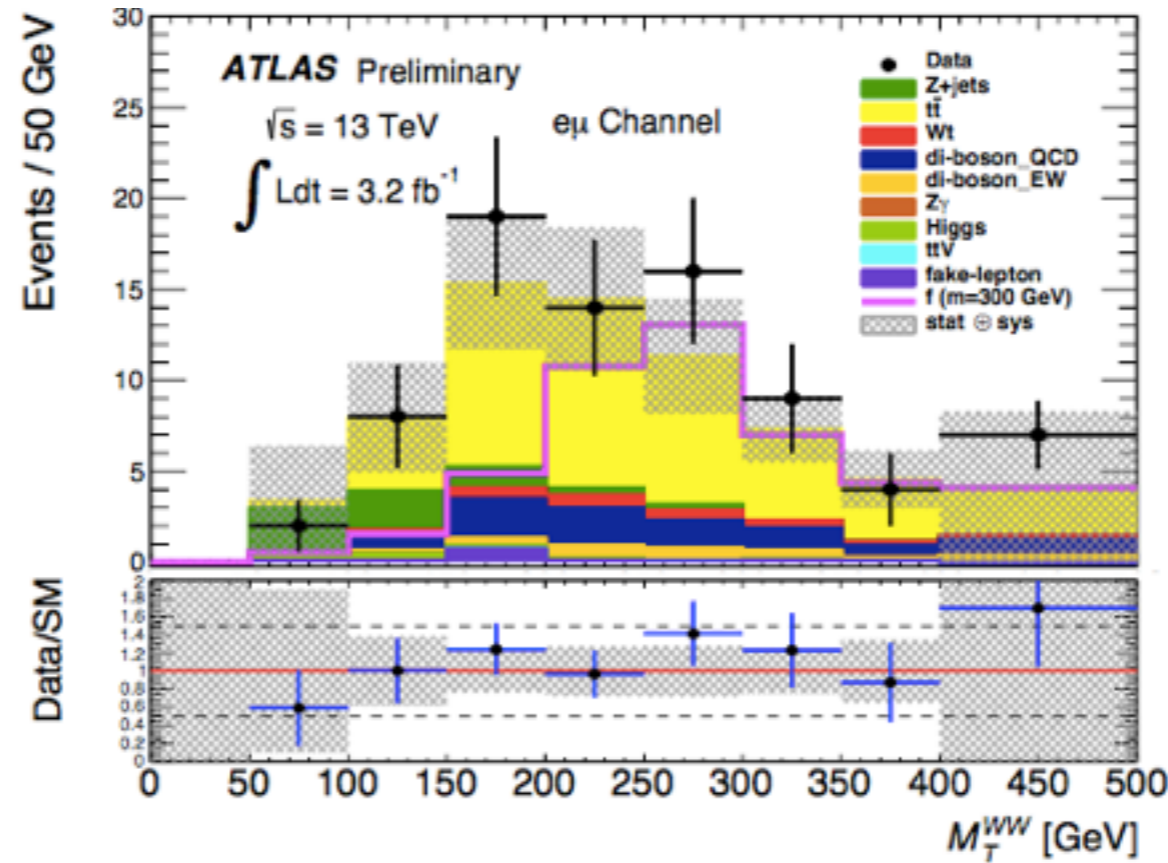
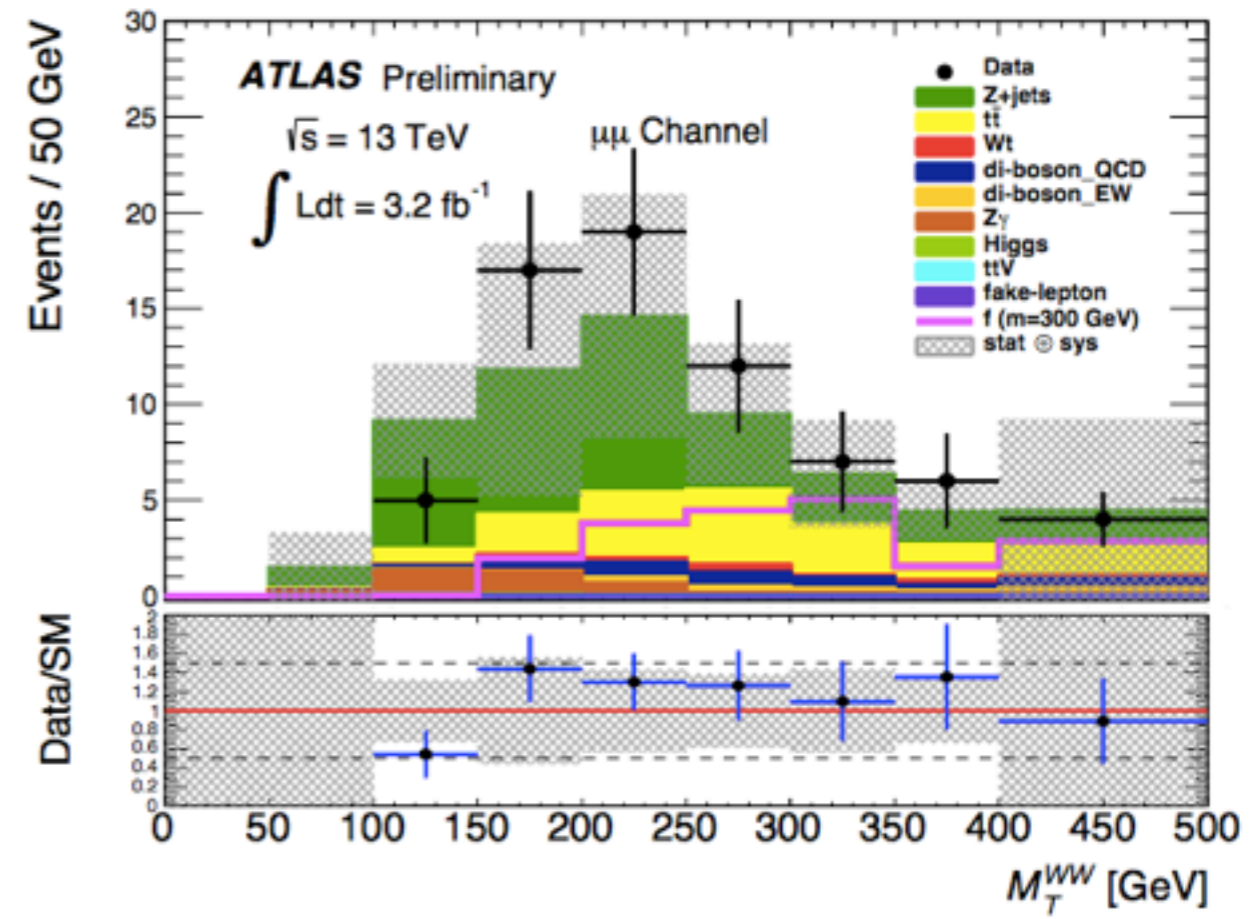
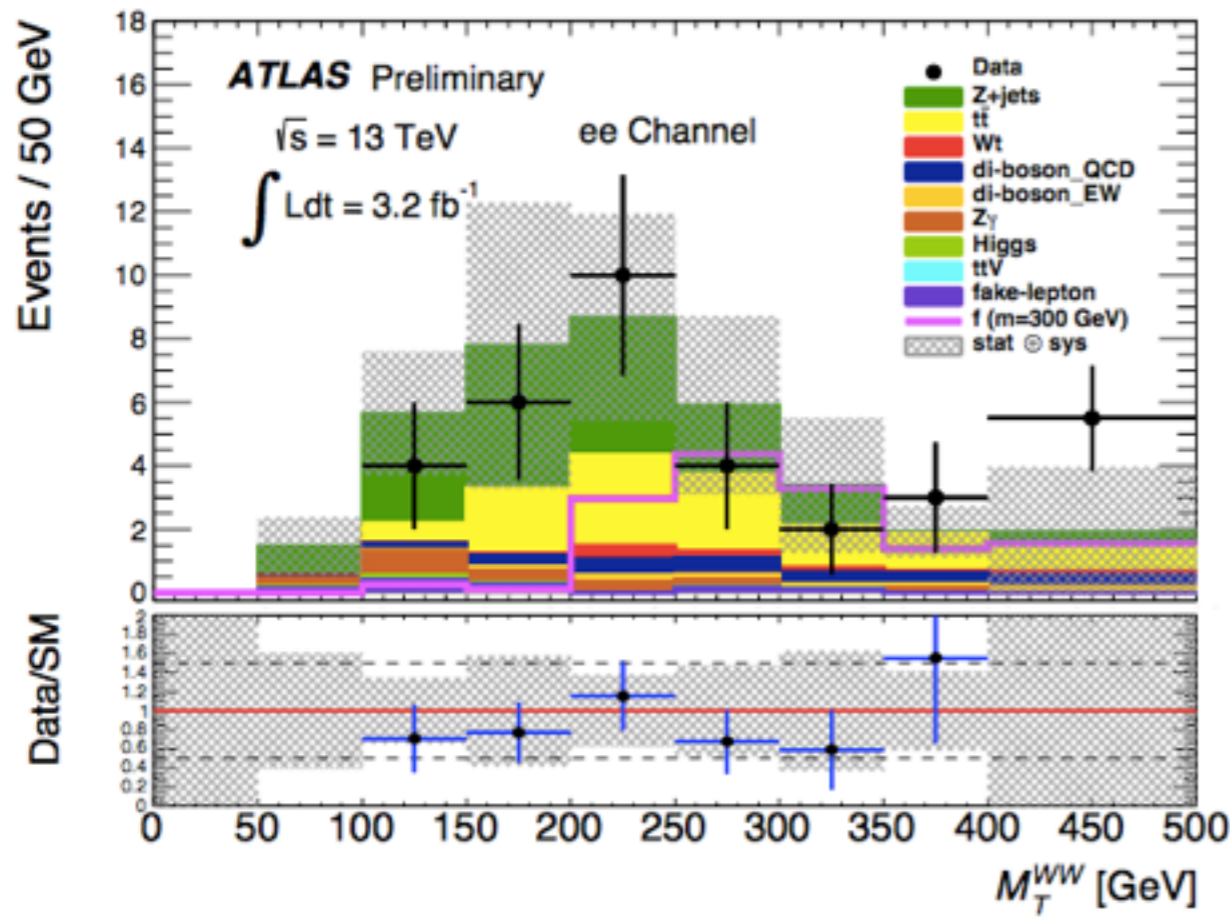
New heavy neutral resonances in VBF at 13 TeV

ATLAS-CONF-2016-053/



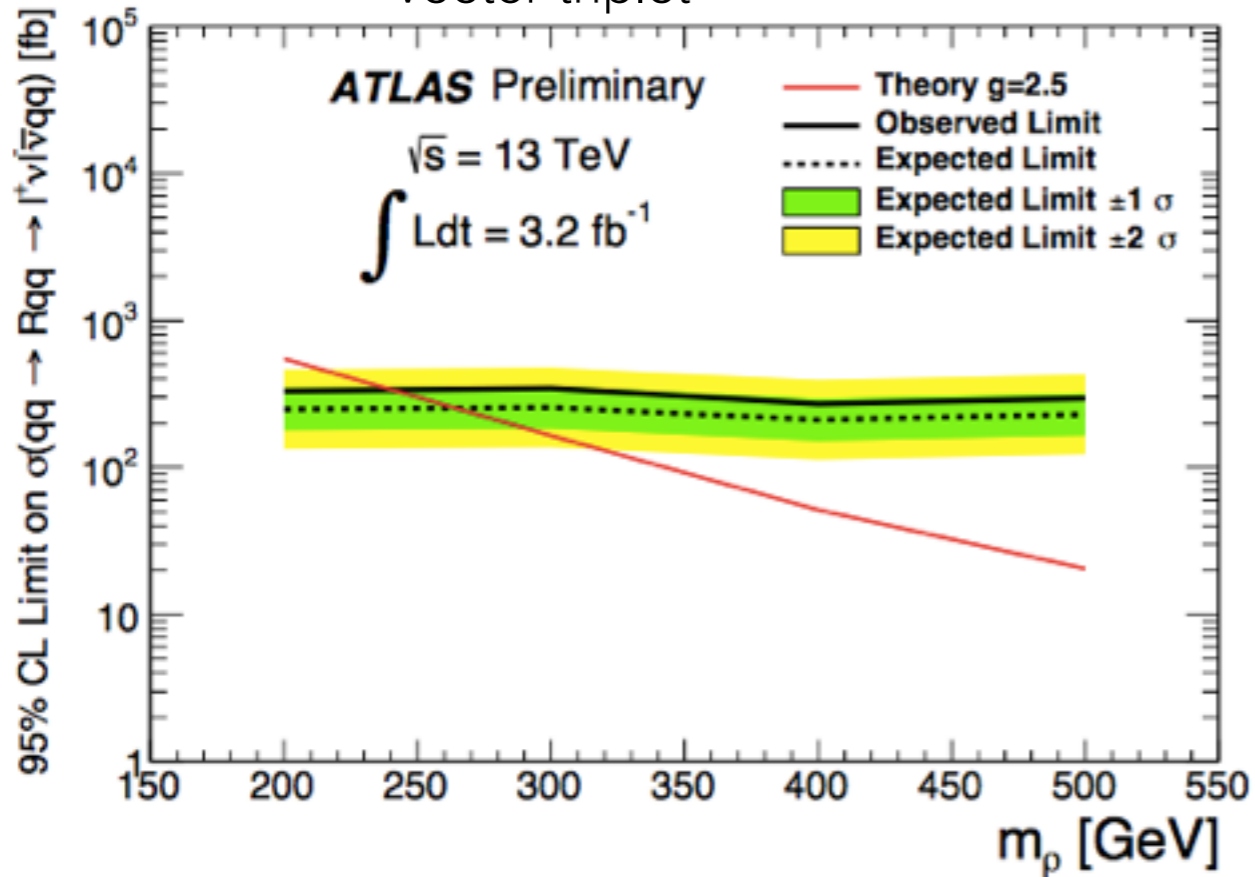
Type	Spin J	Isospin I	Electric Charge	Γ/Γ_0
σ	0	0	0	6
ϕ	0	2	--, -, 0, +, ++	1
ρ	1	1	-, 0, +	$\frac{4}{3}(\frac{v^2}{m^2})$
f	2	0	0	$\frac{1}{5}$
t	2	2	--, -, 0, +, ++	$\frac{1}{30}$

In this search, a benchmark model is used which combines new resonances of different spin and isospin quantum numbers with an effective chiral Lagrangian (EChL) [13–17]. These resonances are assumed to only couple to longitudinal vector bosons and do not couple to fermions, photons and transverse components of vector bosons. The resonance decay widths shown in Table 1 are calculated according to Ref. [15]. These resonances contribute additional terms to the scattering amplitudes and are associated with anomalous quartic gauge couplings implying a violation of unitarity. These effects are evaluated in the EChL model and a unitarization procedure is required, as in Refs. [10, 14–17]. Here, a K -matrix unitarization procedure [14] is used. The EChL gathers three gauge bosons ω^a ($a = 1, 2, 3$) in a matrix which transforms in an $SU(2)_L \times U(1)_Y$ invariant way and the Higgs boson is included in a nonlinear representation.

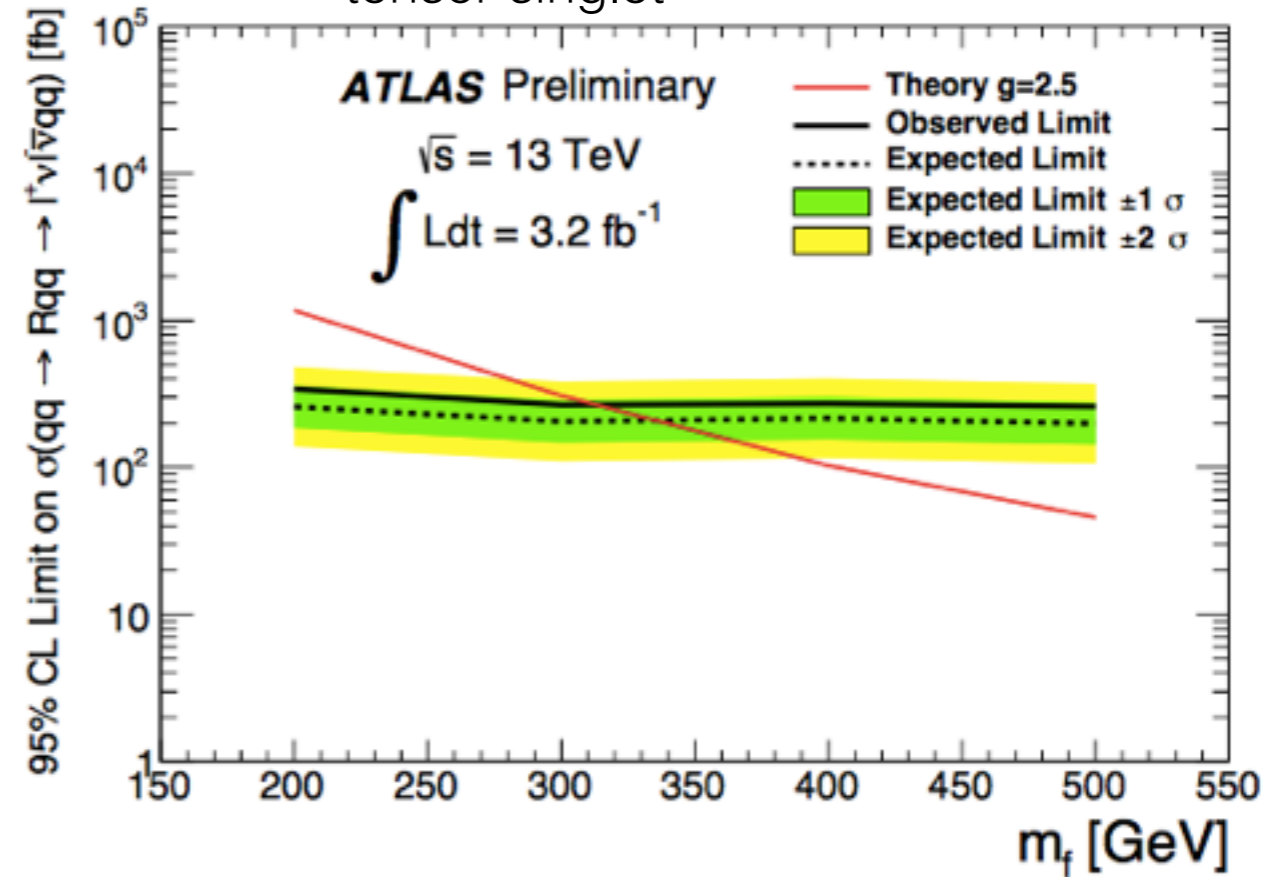


Final Limits

vector triplet



tensor singlet



The coupling of the resonance to longitudinal vector bosons is assumed to be $g=2.5$

- signal samples generated with Whizard, very, very slow \rightarrow only one coupling generated

Is the chiral lagrangian implemented in some other MC generator?

Is there some other resonant model we should discuss?