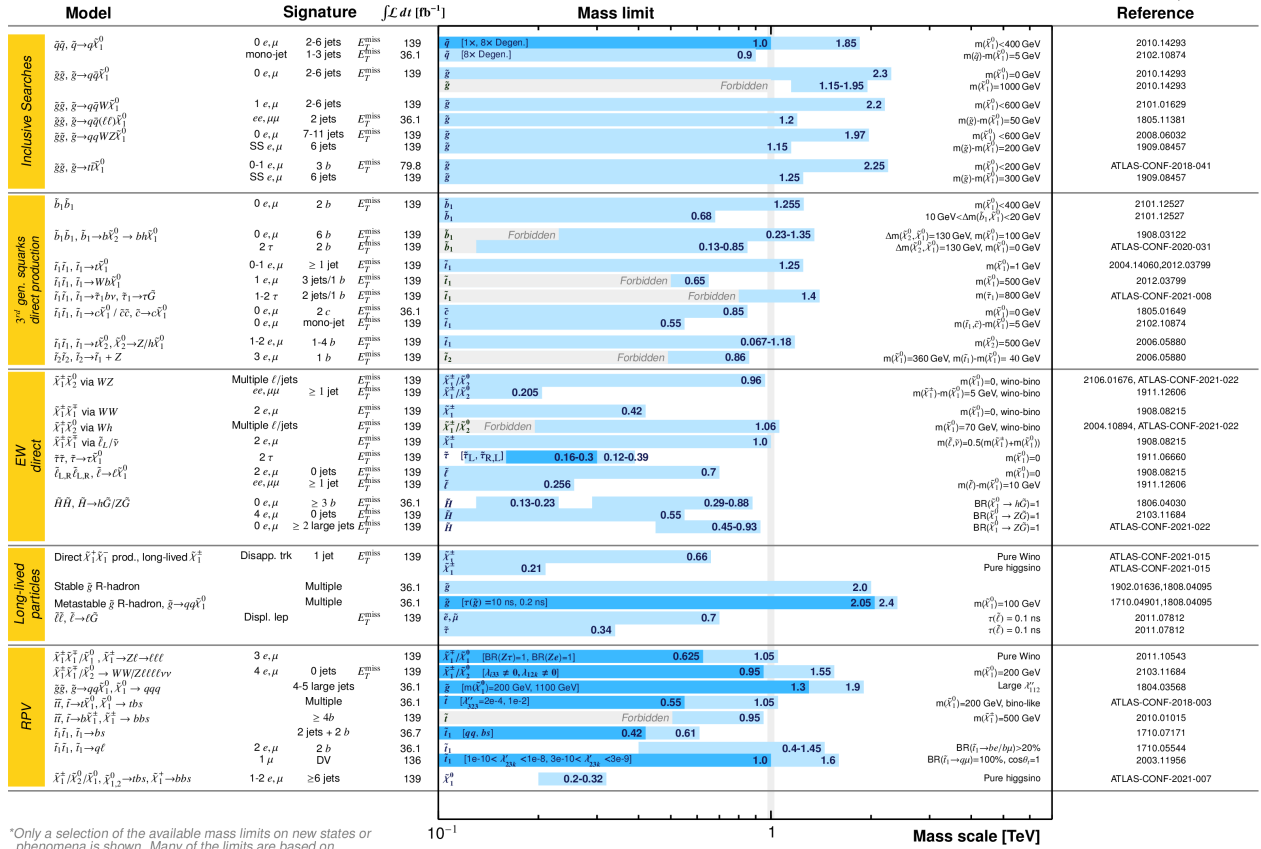


ATLAS SUSY Searches* - 95% CL Lower Limits

June 2021

ATLAS Preliminary
 $\sqrt{s} = 13 \text{ TeV}$


*Only a selection of the available mass limits on new states or phenomena is shown. Many of the limits are based on simplified models, c.f. refs. for the assumptions made.

Figure 0.1: Example for SUSY as BSM Model. All particles shown here have been rejected as they should have been found using described methods in BSM search. [1]

0.1 Relevance of dim-8 operators

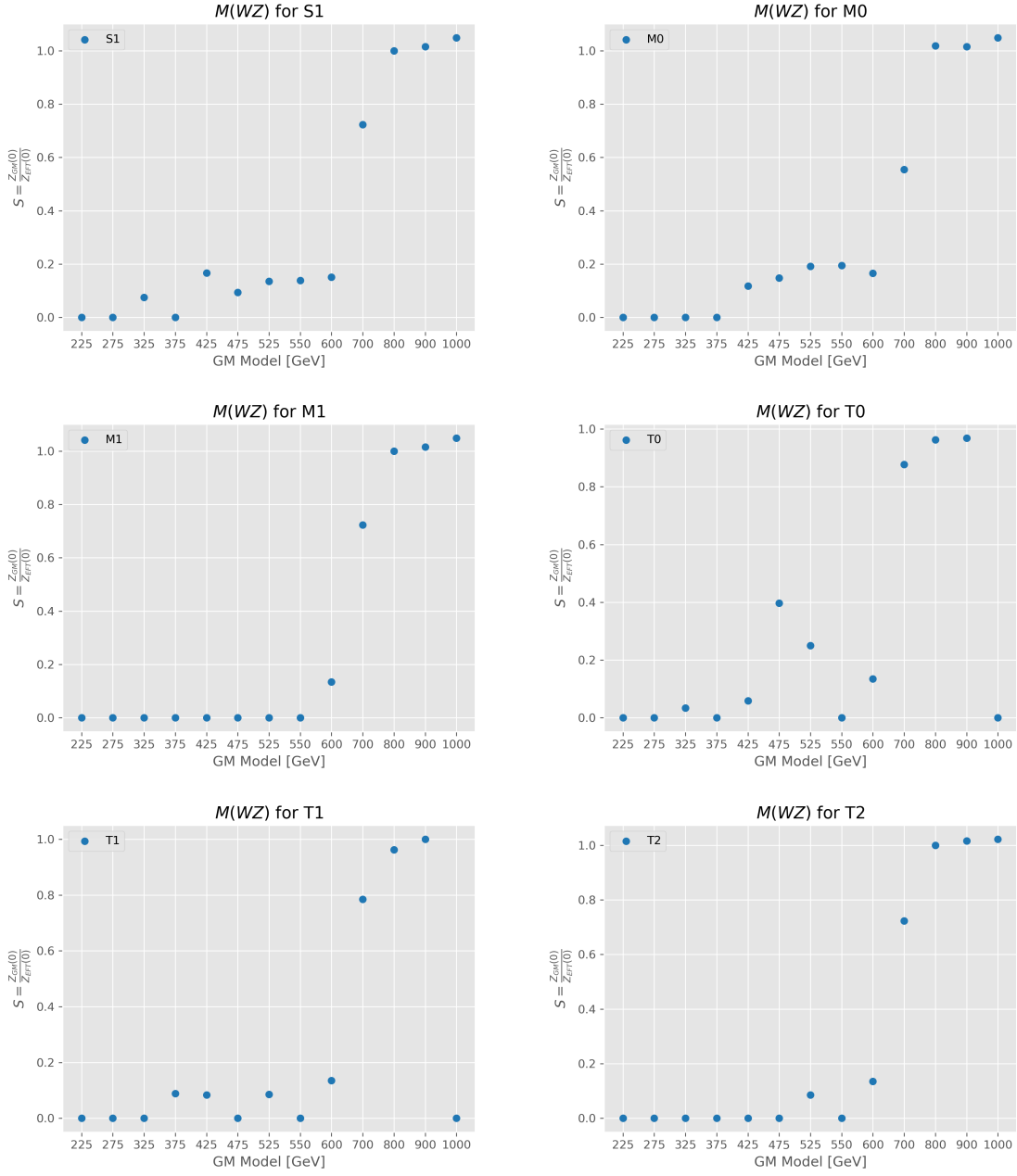


Figure 0.2: Statistical significance ratio for coefficients S1, M0, M1, T0, T1, T2 in invariant mass

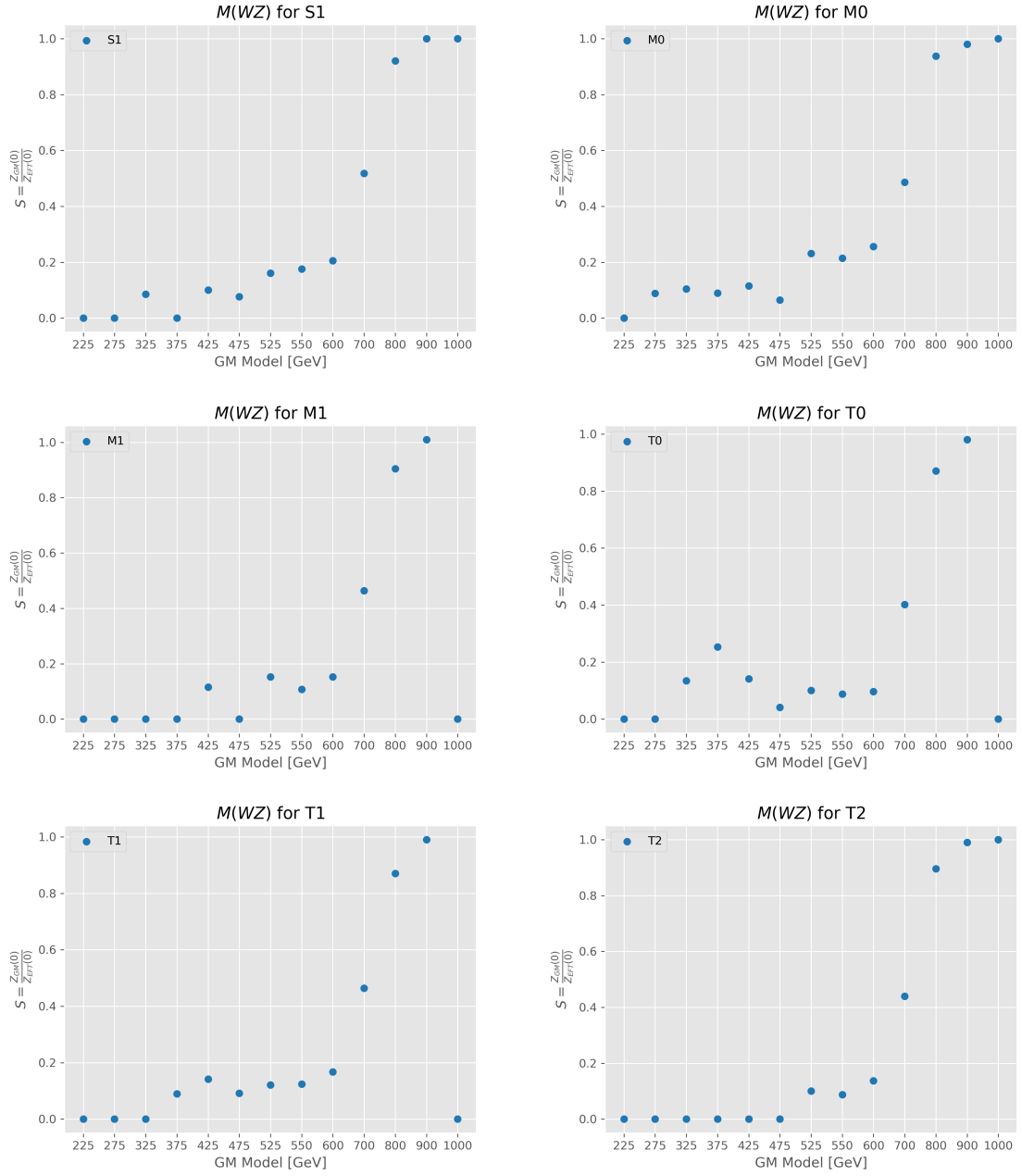


Figure 0.3: Statistical significance ratio for coefficients S1, M0, M1, T0, T1, T2 in transverse mass

0.2 Cross-section comparison for dim-8 operators

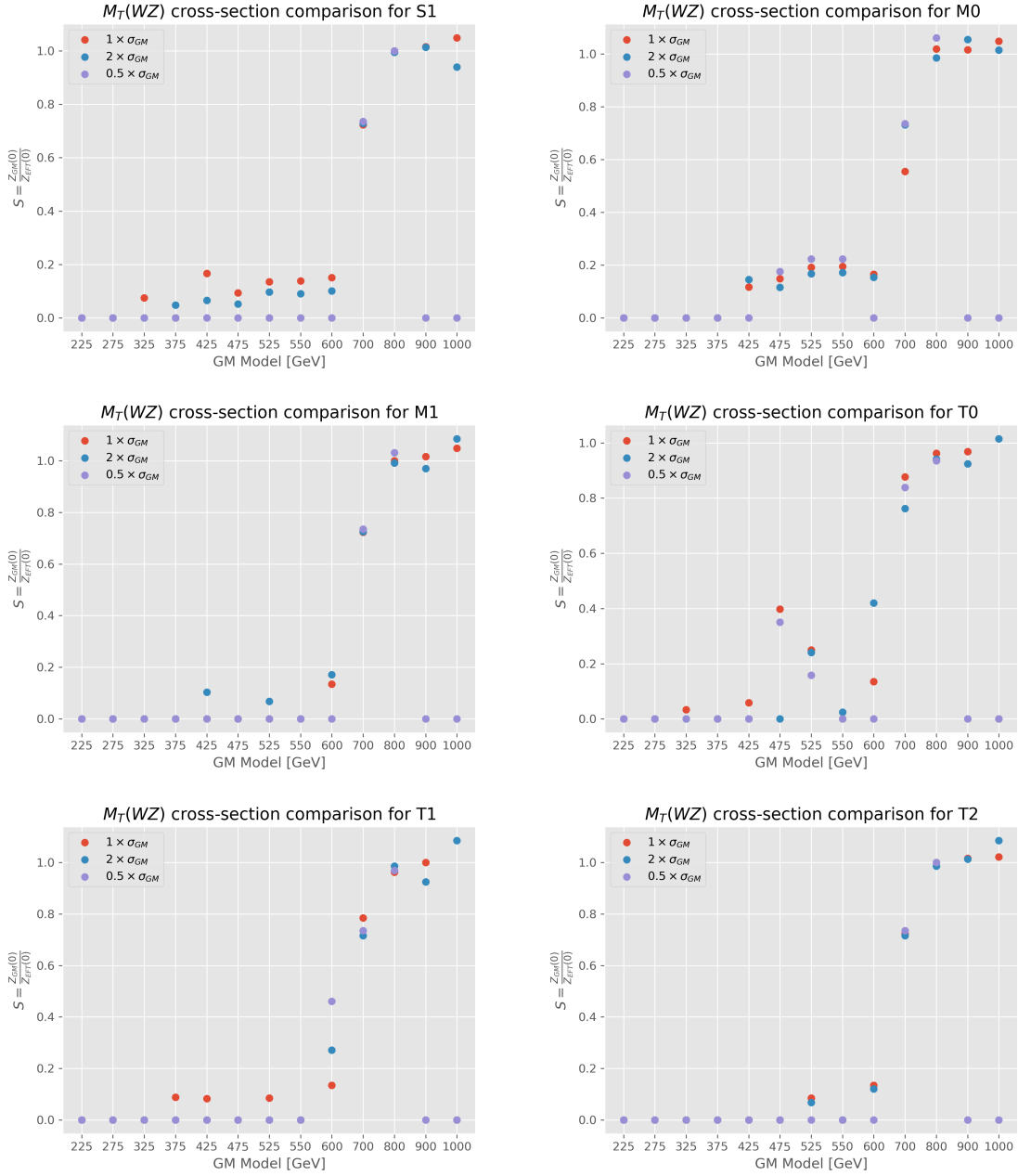


Figure 0.4: Statistical significance ratio cross-section comparison for operators coefficients S1, M0, M1, T0, T1, T2 in invariant mass

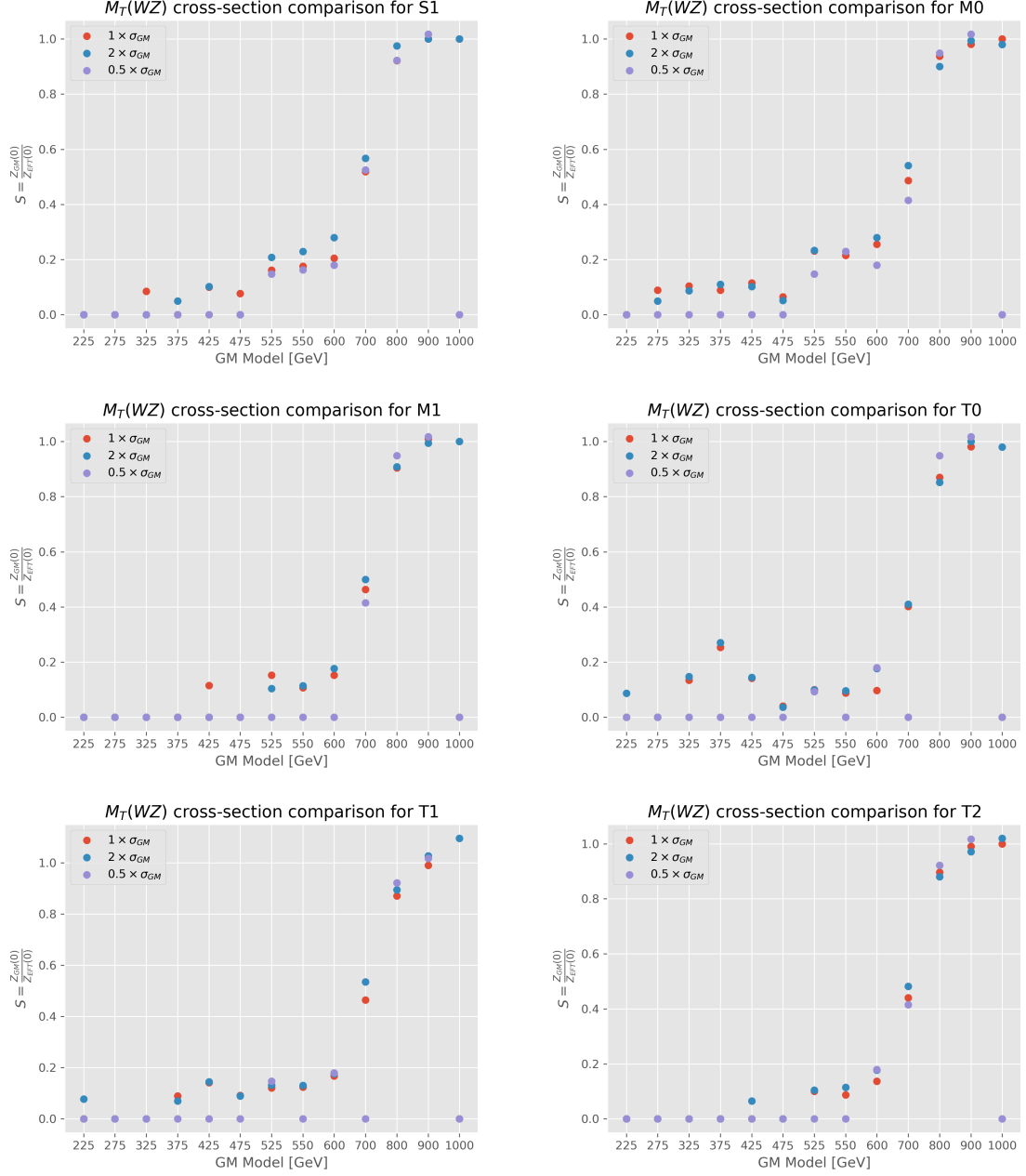


Figure 0.5: Statistical significance ratio cross-section comparison for operators coefficients S1, M0, M1, T0, T1, T2 in transverse mass

0.3 Resonances

0.3.1 900 GeV resonance

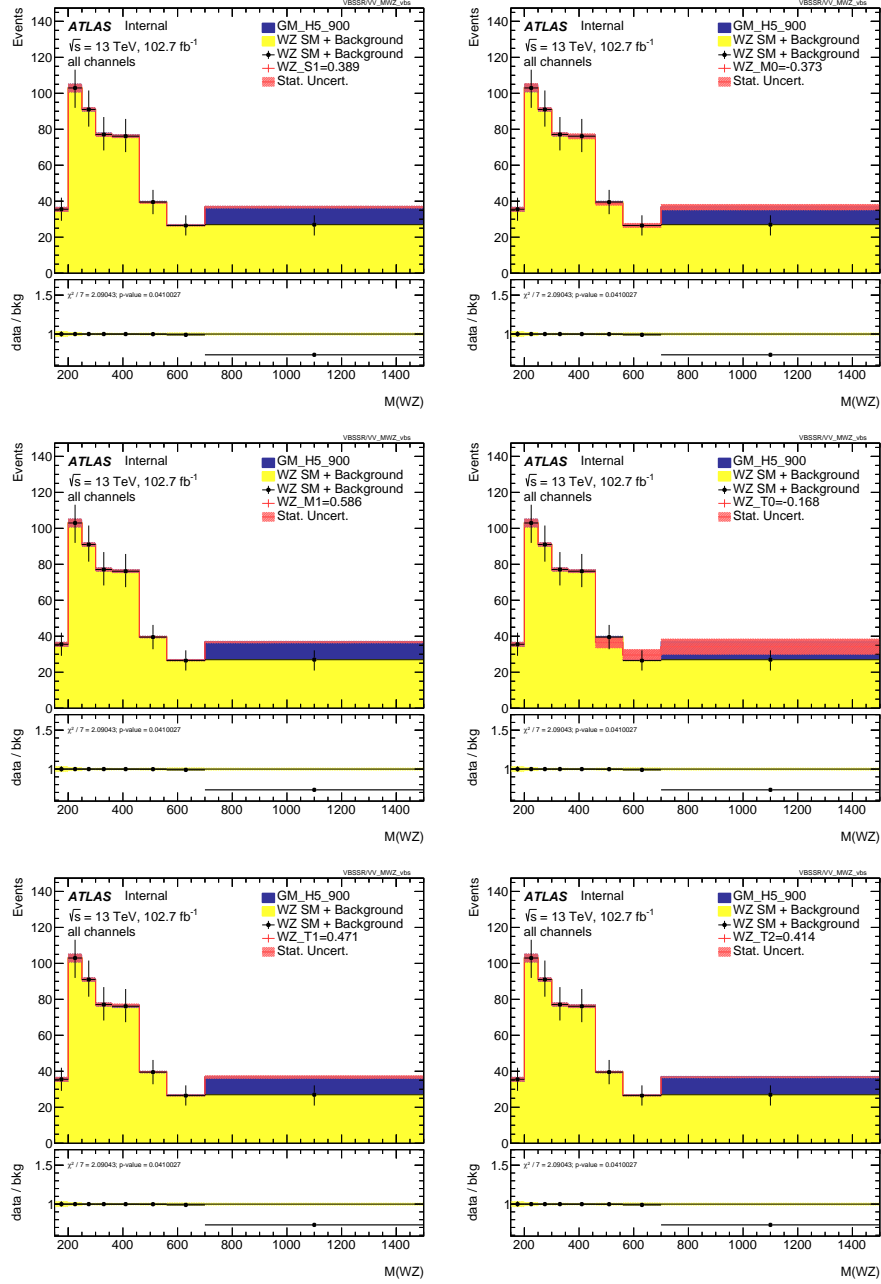


Figure 0.6: Invariant mass for parameters S1, M0, M1, T0, T1, T2 with best fit value for 900 GeV resonance

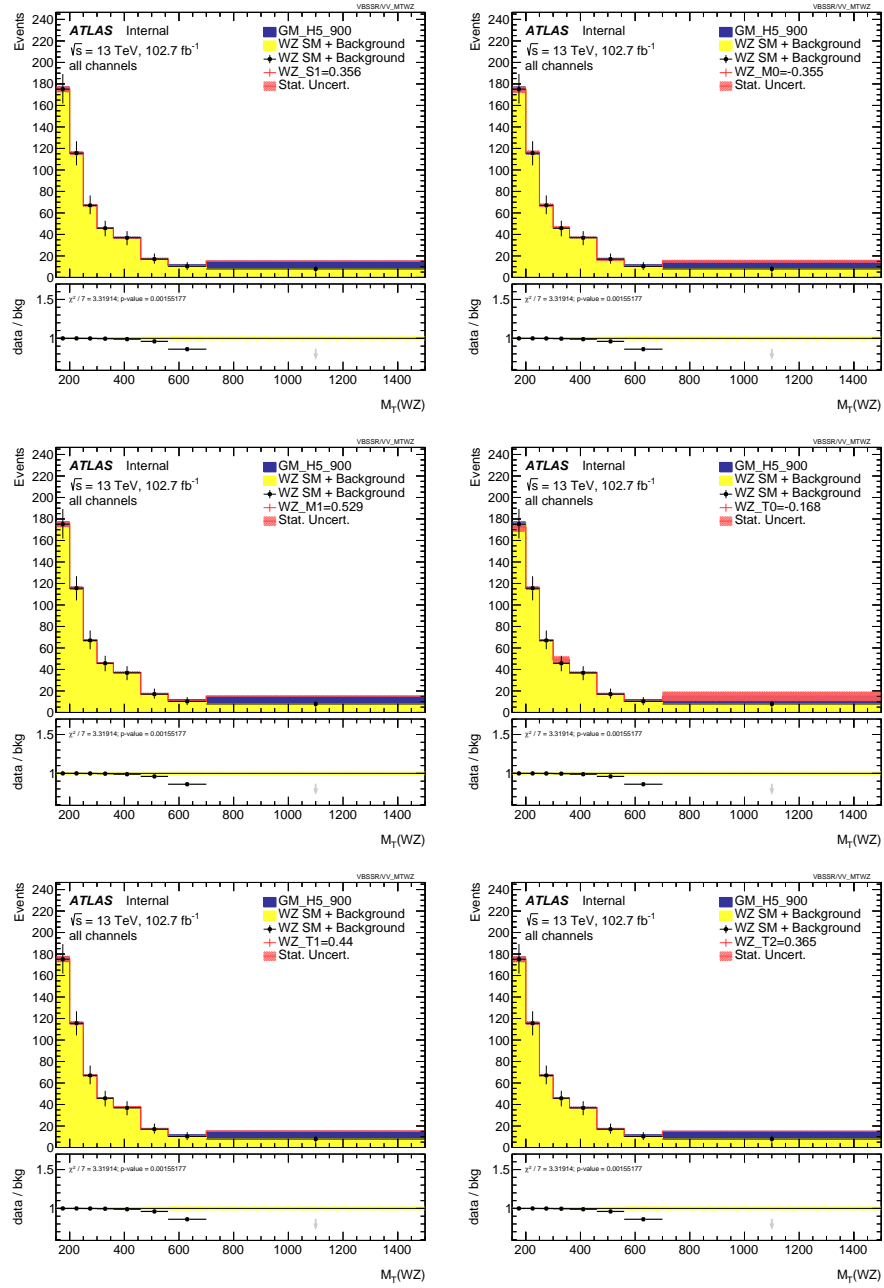


Figure 0.7: transverse mass for parameters S1, M0, M1, T0, T1, T2 with best fit value for 900 GeV resonance

Figure 10 displays six plots showing the invariant mass distribution of WZ pairs for different WZ mass parameters. Each plot consists of a top panel showing the event count (0 to 140) versus invariant mass $M(WZ)$ (200 to 1400 GeV) and a bottom panel showing the data-to-background ratio (1.0 to 1.5). The top panels show data points (black dots with error bars) and theoretical predictions (colored lines: blue for GM_H5_1000, yellow for WZ SM + Background, green for WZ SM + Background, red for WZ_T1=0.401, and red for WZ_T2=0.355). The bottom panels show the data-to-background ratio (black dots with error bars) and the theoretical prediction (yellow line). The plots are labeled "ATLAS Internal" and " $\sqrt{s} = 13$ TeV, 102.7 fb⁻¹ all channels". The plots are arranged in a 3x2 grid. The left column shows results for WZ_T1=0.401 and the right column shows results for WZ_T2=0.355. The top row shows results for WZ_M0=0.32 and the bottom row shows results for WZ_M1=0.505. The plots are labeled "VBSRRVV_MWZ_vs".

Figure 0.8: Invariant mass for parameters S1, M0, M1, T0, T1, T2 with best fit value for 1000 GeV resonance

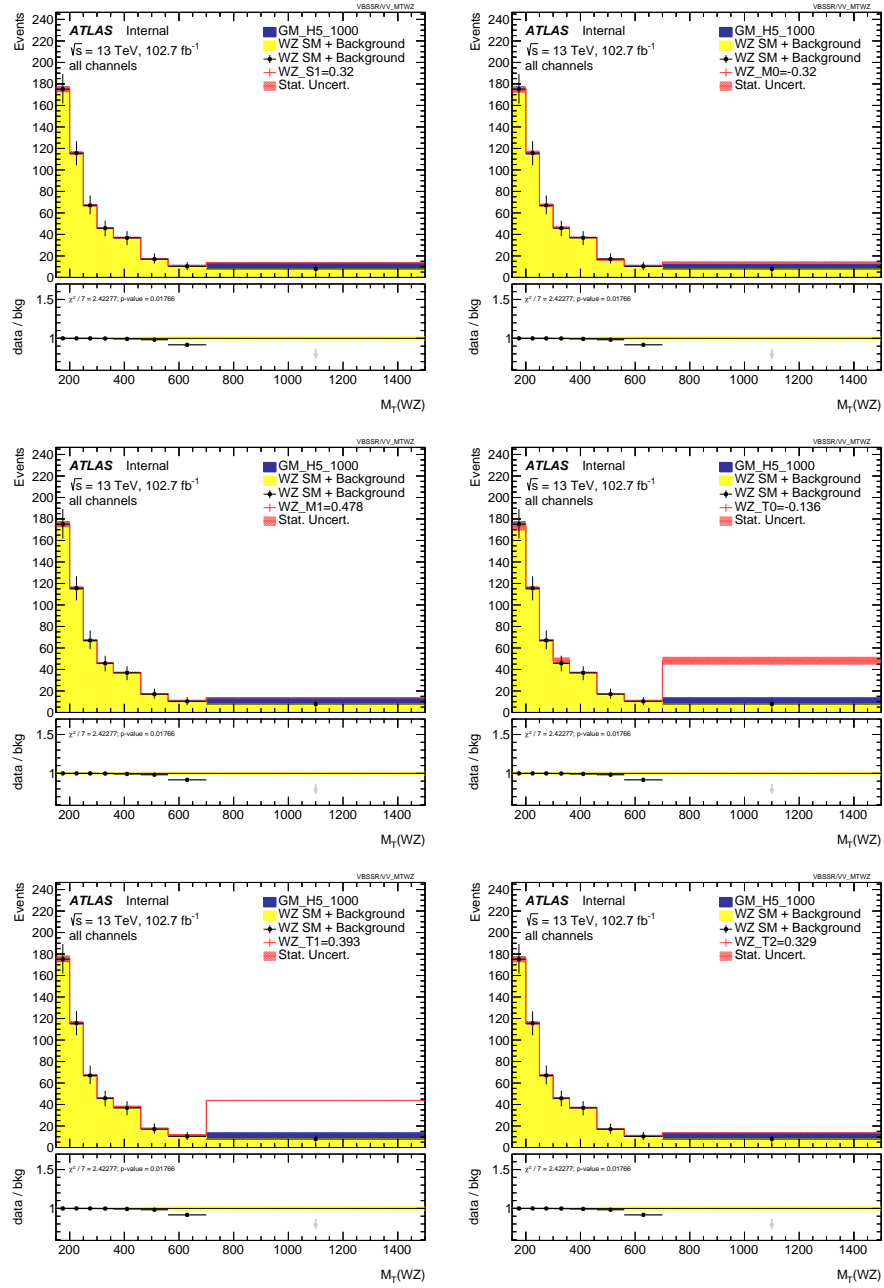


Figure 0.9: transverse mass for parameters S1, M0, M1, T0, T1, T2 with best fit value for 1000 GeV resonance