Contribution ID: **371** Type: **Poster report**

# High-precision limits on W-W′ and Z-Z′ mixing from diboson production using the full LHC Run 2 ATLAS data set

*Tuesday, 13 October 2020 19:15 (20 minutes)*

The full ATLAS Run 2 data set with time-integrated luminosity of 139 fb$^{-1}$ in the diboson channels in hadronic final states is used to probe a simple model with an extended gauge sector (EGM), proposed by Altarelli et al., and often taken as a convenient benchmark by experimentalists. This model predicts new charged $W'$ and neutral $Z'$ vector bosons with modified trilinear Standard Model gauge couplings, decaying into electroweak gauge boson pairs $WZ$ or $WW$, where $W/Z$ decay hadronically. Exclusion limits at the 95\% C.L. on the $Z'$ and $W'$ resonance production cross section times branching ratio to electroweak gauge boson pairs in the mass range of $\sim 1 - 5$ TeV are here converted to constraints on $W$-$W'$ and $Z$-$Z'$ mixing parameters and masses for the EGM.
We present exclusion regions on the parameter space of the the $W'$ and $Z'$ by using the full Run 2 data set comprised of $pp$ collisions at $\sqrt{s} = 13$ TeV and recorded by the ATLAS detector at the CERN LHC. The obtained exclusion regions are significantly extended compared to those obtained from the previous analysis performed with Tevatron data as well as with LHC data collected at 7 and 8 TeV in Run˜1 and are the most stringent bounds to date.

**Primary author:** Dr SERENKOVA, Inna

**Presenter:** Dr SERENKOVA, Inna

**Session Classification:** Poster session 4 (part 1)

**Track Classification:** Section 4. Relativistic nuclear physics, elementary particle physics and high-energy physics.