Searching for a Pair-Produced Supersymmetric Top Partner using Recursive Jigsaw Variables and Boosted Decision Trees in pp Collisions at $\sqrt{s} = 13$ TeV with the ATLAS Detector JARED LITTLE, University of Texas at Arlington, ATLAS COLLABORATION — Recent results will be presented of a search for the direct pair production of top squarks in events with two opposite-charge electrons or muons and missing transverse momentum. This search was performed using protonproton collision data collected by the ATLAS detector at the Large Hadron Collider between 2015-2018. This analysis is sensitive across a wide range of mass differences between the top squark and the lightest neutralino, including the three-body decay region as well as the two-body decay region where the difference between the stop and neutralino mass approaches the mass of the top quark. For separating the signal from the background the recursive jigsaw reconstruction technique is used. It is a method that estimates the rest masses of the intermediate particles in order to construct powerful discriminating variables. We also explore a supervised learning technique, training boosted decision trees using our jigsaw variables to further push our sensitivity for discovery.

Jared Little
University of Texas at Arlington