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Complete measurement of the top-quark polarisation in single top-quark production in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector RUNYU BI, JOSEPH BOUDREAU, University of Pittsburgh, NELLO BRUSCINO, The Sapienza University of Rome, SUSANA CARBRERA URBAN, MARIA JOSE COSTA, University of Valencia, MARCUS DE BEURS, Nikhef, CARLOS ESCOBAR, OSCAR ESTRADA PASTOR, JOSE ENRIQUE GARCIA NAVARRO, GALO RAFAEL GONZALVO RODRIGUEZ, PABLO MARTINEZ AGULLO, University of Valencia, JAMES MUELLER, CHI WING NG, University of Pittsburgh, MARCEL VREESWIJK, Nikhef, ATLAS COLLABORATION — At the LHC, electroweak production of single top quarks in the t-channel leads, in the standard model, to a high degree of top quark polarization. Two subprocesses, $ub \to dt$ and $\bar{d}b \to \bar{u}t$ contribute to t-channel production of single top, while the charge-conjugate processes contribute to production of antitop. The top (antitop) quark is expected to be polarized along the direction of the scattered light-quark (or "spectator" quark), and opposite to that direction for antitop production. This talk presents a measurement of the top quark polarization produced within a fiducial region of acceptance, using an integrated luminosity 139 fb^{-1} of proton-proton collisions at 13 TeV, collected by the ATLAS detector. From the angular distribution of top quark decay products, we obtain all three components of the polarization of both top quarks and top antiquarks. In addition, differential angular distributions for angles $_{lx}, _{ly}, _{lz}$ unfolded at particle level, for events lying within the fiducial acceptance of the analysis are also provided.

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