Constraints on Gluon Polarization in the Proton from PHENIX Double Helicity Asymmetry Data. ALEXANDER BAZILEVSKY, Brookhaven National Laboratory, PHENIX COLLABORATION — PHENIX experiment at RHIC has collected significant amount of data on longitudinal double spin asymmetry ($A_{LL}$) for different particle production in polarized proton collisions, which is sensitive to the gluon polarization ($\Delta G$) in the proton. We discuss a simple approach to constrain $\Delta G$ from PHENIX $\pi^0 A_{LL}$ data through the comparison with NLO pQCD calculations that incorporate a model of gluon polarization. Limitations of this approach as well as an opportunity to include other channels will be discussed.