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Improvements to Proton-Carbon Polarimetry at RHIC KYLE GAINEY, Abilene Christian University, RHIC POLARIMETER GROUP COLLABORATION — The Relativistic Heavy Ion Collider (RHIC) complex at Brookhaven National Lab provides a beam of up to 70% polarized protons for study of polarized proton collisions to better understand proton spin structure. The RHIC polarimetry group operates and maintains Proton-Carbon (pC) polarimeters which measure the spin of the protons by running a 10μm wide carbon strip through the beam, detecting recoiling carbon atoms, and calculating the asymmetry in the carbon recoil. This asymmetry is directly proportional to the beam polarization. The carbon strips are made by evaporating carbon with an electron beam. This method produces targets with very limited lifetimes. An advanced method is being developed to lengthen target lifetimes. The laser plasma ablation (LPA) method offers carbon strip targets whose atoms are more isotropically distributed, resulting in a more durable target. With LPA, a laser is pulsed at a carbon disk, the carbon atoms on the surface of the disk become a plasma, and the atoms condense on a slide, forming strips. This poster will focus on RHIC pC polarimetry and the LPA method of making carbon strip targets.

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