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Ionizing Laser System for Calibration in the sPHENIX TPC KRISTINA FINNELLI, Stony Brook University, SPHENIX COLLABORATION — The sPHENIX detector is currently being built at RHIC in order to study the properties of quark gluon plasma caused by heavy ion collisions. This is done by measuring the upsilon states and jets formed from these collisions. To reconstruct these observables, sPHENIX will use a Time Projection Chamber (TPC) as its central tracker, which will measure the charged particle tracks. An issue inherent to a TPC is space charge, which distorts the field lines in the TPC, causing the apparent path of the tracks to change. A compact, steerable, ionizing laser calibration system will be used to provide a known track that allows us to study the evolving components of the distortion throughout the TPC. The laser is sent through a quartz bar as it enters the TPC, where it is directed with total internal reflection. By changing the angle that laser enters the quartz bar, we can shine the laser at almost any angle in the TPC, greatly improving the abilities of the calibration. I will discuss the design of the laser system and studies of its performance.

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