Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Exceptional X-ray Weak Quasars and Their Implications for Accretion Flows, Winds, and Broad Line Regions WILLIAM BRANDT, BIN LUO, Pennsylvania State Univ, PATRICK HALL, York Univ, JIANFENG WU, Univ of Michigan, THE SDSS WEAK-LINE QUASARS TEAM TEAM — Actively accreting supermassive black holes (SMBHs) are found, nearly universally, to create luminous X-ray emission. However, there are apparent X-ray weak exceptions to this rule that are now providing novel insights, including many weak-line quasars (WLQs). We have been systematically studying such X-ray weak quasars with Chandra observations and near-infrared spectroscopy, and I will report results on their remarkable properties and describe implications for models of the accretion disk/corona, quasar winds, and emission-line formation. We have found evidence that many of these WLQs have geometrically thick inner accretion disks, likely due to high Eddington ratios, that shield the high-ionization broad line region from the relevant ionizing continuum. This basic model can explain, in a unified manner, the weak lines and diverse X-ray properties of WLQs. Such shielding may, more generally, play a significant role in shaping the broad distributions of quasar emission-line equivalent widths and blueshifts. An expectation of our model is that WLQs should be more common at high redshift, and they may serve as a signature of rapid SMBH growth at early cosmic times. I will end by discussing some promising ongoing studies that are extending these ideas.

William Brandt
Pennsylvania State Univ

Date submitted: 12 Nov 2015 Electronic form version 1.4