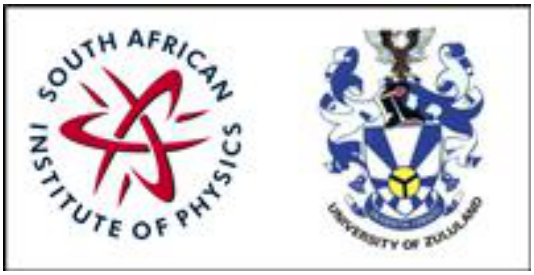

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SDSS J12002-0204: Unusual I Zw 1 object or a nearby BAL Seyfert?

Wednesday, 10 July 2013 17:40 (1 hour)

Abstract content
   (Max 300 words)

Emission line diagnostics in active galactic nuclei (AGN) provide vital clues about the physical conditions of gas responsible for the emission. We typically identify a region of narrow-line formation that normally includes oxygen, nitrogen and other forbidden lines. In some objects (Type 1 Seyferts) we in addition detect broad Balmer lines, helium lines and, in some instances, emission features attributed to FeII.

During a search for AGN in the Sloan Digital Sky Survey (SDSS), we discovered a spectrum of SDSS J12002-0204, a z˜0.091 Seyfert galaxy that displayed some unusual features. The narrow forbidden lines were all but absent (with only [OII] very barely visible), the FeII spectrum was prominent and NaI absorption was clearly detected. In these respects, the object resembled the usually much more distant “broad absorption line” (BAL) quasars with strong FeII lines (e.g., IRAS 07598+6508). The emission lines are in addition comparatively narrow, which makes this object an interesting hybrid between the BAL Seyferts and the class of AGN referred to as “narrow line Seyfert 1 galaxies” with weak forbidden lines (also called I Zw 1 objects).

We performed spectral line fitting on the SDSS data and compare line ratios in an attempt to shed light on the nature of the nuclear region of this interesting object. We discuss the limitations of the available data, and conclude that a better signal to noise spectrum would allow us to determine the relative strengths of any other forbidden lines in the spectrum, get better profiles of the absorption features and better define the FeII spectrum. We use this to motivate for follow-up observations using the SALT IRS spectrometer in the upcoming round of proposals.

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