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Seyfert 2 galaxies with unusually wide nebular lines

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Abstract content
 (Max 300 words)

We report on a set of AGN that match the Seyfert 2 galaxy classification criteria, but display unusually wide “narrow” lines, with the 4959 and 5007 Angstrom nebular lines overlapping with each other. This spectral line broadening is in most cases evidence of a complex profile with multiple components. It indicates an unusual narrow line region with diverse gas clouds and a range of velocity systems.

We list the objects with these characteristics identified and, where available, evaluate their SDSS spectra. We measure the strengths, widths and relative velocities of all lines visible in the spectrum, and attempt to fit multiple Gaussian profiles to the nebular lines. We quantify the line parameters of all multiple velocity systems discovered.

We compare the spectral characteristics of our sample with those of other, ‘conventional’ type 2 Seyferts and attempt to determine whether other systematic spectral differences exist. We consider whether the investigated sample constitutes a clear sub-class of the Seyfert 2 population.

In conclusion we offer possible explanations for the unusual line profiles.

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