DETERMINATION OF NGC 4151 NUCLEUS MASS FROM PARAMETERS OF NARROW SATELLITES OF BROAD LINES

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The paper considers the possibility of AGN mass estimation from observations of spectral lines emitted by jets. Jets are a typical for AGNs.

Similar to SS433 the inner parts of AGN jets may emit spectral lines. SS433 spectra show that jet lines are week in comparison with those of slowly outflowing gas. Consequently the proper time for AGNs jet lines observations is the deep brightness minima (so-called transition from Sy1 type to Sy2 type of spectra). It is possibly the only chance for jet lines observations, because on the Sy1 stage gas surrounding the central object can be optically thick in the broad lines wings or at least light up the week jet lines. The only well studied case of AGN transition from Sy1 to Sy2 with evidence of jets is NGC 4151 when this galaxy was in a deep minimum of brightness during the 1984-1987.

Analysis of NGC 4151 spectra observed by IUE during 1984 reveals evidence of variations in narrow satellites of CIV1550 Å line (Ulrich et al. 1985), (Clavel et al. 1985). Later, when NGC 4151 returned to the bright state the CIV1550 Å satellites were seen no more. Bochkarev et al. (1991) have got some evidence of possible existence of week narrow satellites of hydrogen lines during 1986-1987. They estimated the mass of the nucleus using the satellites radial velocity. However as observations (Bochkarev et al. 1991) have been done with low signal to noise (S/N) ratio, they are not sure of the results. Meanwhile, the method described by Bochkarev et al. (1991) could be used for another Seyfert type transitions.

References

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