

CIRCUMNUCLEAR STAR FORMATION IN SEYFERT GALAXIES

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ABSTRACT: Using population synthesis methods the nuclear and circumnuclear spectra of Seyfert galaxies were modeled. The central nonthermal intensity and the surrounding star formation rate are correlated.

OBSERVATIONS AND POPULATION SYNTHESIS METHODS

We have obtained deep optical 2D-spectra of five nearby and face-on Seyfert/Starburst galaxies: NGC 1365, NGC 1566, NGC 1808, NGC 3081 and NGC 1097. The data have a spectral resolution of 3.5Å (covering the wavelength range from 3700-7200 Å) and a spatial resolution of a few hundred pc.

Population syntheses of the spectra were calculated using a modified Simplex algorithm developed by us. The presence of a possible nonthermal component was taken into account. The stellar library we used contains O5-M8 main sequence and giant stars. No initial solution is required and the nonnegativity condition for the various contributions is guaranteed.

RESULTS

The spatial extent of the nonthermal component peaks at the nuclei in the Seyfert galaxies as expected. No such component was found in NGC 1097 proving its starburst nature only. Generally, strong starburst components were found within 2 Kpc of the active galactic nuclei superimposed on an old stellar component. Furthermore, we found a correlation of the strength of the nonthermal flux coming from the central active nucleus with the strength of the circumnuclear starburst in the Seyfert galaxies. This is an indication of the induced nature of circumnuclear starbursts in Seyfert galaxies as expected by M. Begelman (1985, Ap. J. 297, 492).

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