the relation $\log(L_{H\alpha}) \propto D^3$. The $\log(L_{H_\alpha})$ vs. $\log D_{100}$ relation allow us to obtain a density range between 40 and 500 cm^{-3}, with an average value of 150 cm^{-3}. Core and halo diameter distributions shown different curves, indicating that a second parameter, probably dependent on the evolution of the H II region, might be defined to take into account its degree of concentration. In order to consider this different behavior between D_c and D_{100}, we defined a parameter of concentration as R_c/R_{100}, which makes evident the differences in brightness distribution among the H II regions. The brightness distributiuon in the Hα line, defined through the core/halo diameters ratio, follows a generalized Hubble-Reynolds law. The temperature of the ionizing sources and the metallicity of the H II regions are respectively in the ranges $3.4 \times 10^4 \leq T_\star \leq 4.0 \times 10^4$ K and $8.5 \leq 12 + \log(O/H) \leq 9.3$.

SPECTROSCOPIC ANALYSIS OF THE CONTINUUM AND EMISSION LINES OF THE SEYFERT 1 GALAXIES F10.01, A08.12, AND C16.16

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We study the continuum and emission lines in the optical region of the Seyfert 1 galaxies F10.01, A08.12 and C16.16. The age and metallicity of the stellar population of the host galaxies, as well as the contribution of this population to the integrated spectra are determined. Once subtracted the above contribution, the nuclear continuum emission is decomposed in four components: a single power-law spectrum, associated to the optical "tail" of the ionizing continuum and generated in the central source, high-order Balmer lines, the Balmer continuum and numerous Fe II lines. These three last components form an apparent continuum, in excess of the power-law, from 3200 to 5500 Å. After subtracting these components, the resulting spectra are constituted by pure line emission, emitted by the gas of the active nuclei. A multiple Gaussian component model is used to describe the different emission line profiles of the three galaxies. From this analysis, we obtain the structure and physical conditions of the different emission regions. Photoionization models are used to reproduce the main flux line ratios and to find out the ionization parameter and abundances of the narrow-line regions. We report variability of the continuum and broad emission lines of the C16.16 galaxy, whose broad Hα and Hβ profiles show double-peaked structure. We demonstrate that line profiles emitted by a relativistic circular disk can adequately fit the broad Hα profile of this galaxy. Other possible scenarios that can lead to the formation of double-peaked line profiles are discussed.

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GAS EXCITATION, KINEMATICS AND CHEMICAL ABUNDANCES IN ACTIVE GALAXIES

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We study the gaseous kinematics and chemical abundance in the nuclear region of galaxies with star-forming regions close to the active nucleus. The goal of this work is to investigate a possible relation between the gaseous dynamics and chemical processing in the nuclear activity. We discuss the results for three galaxies: NGC 1598, which shows a LINER nucleus; NGC 1386, which shows a Seyfert 2 nucleus; and IC 1816, a LINER galaxy with broad emission lines at the nucleus. Medium dispersion long-slit spectroscopy along the major axis of the galaxies was used to obtain the velocity field and map the gas excitation. Most of the H II regions studied in the present analysis are located near the turnover of the rotation curves. We find a correlation between the line ratios [N II]/Hα and [S II]/Hα and the Full-Width at Half-Maximum (FWHM) of the [N II]λ6583 emission-line. Using low dispersion long-slit spectroscopy we have obtained the oxygen and nitrogen chemical abundances of 18 H II regions, which were used to extrapolate the nuclear gas abundance. It was found that this nuclear abundance varies from solar to 2 times solar for oxygen and from 2 times solar to 4 times solar for nitrogen. These values are similar to those observed in normal galaxies with the same luminosity and morphological type and do not support anomalous chemical evolution in the central region of active galaxies. We find evidence of the presence of a warm ionized medium in the inner region of the three galaxies. This diffuse emission increases the [N II]/Hα and [S II]/Hα line ratios of the H II regions close to the nuclei and may therefore explain the sistematically larger [N II]/Hα and [S II]/Hα line ratios previously found by several authors in these regions.

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