

## Oxygen abundance distributions in six late-type galaxies based on SALT spectra of H<sup>II</sup> regions

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### Abstract

© ESO 2015. Spectra of 34 H<sup>II</sup> regions in the late-type galaxies NGC 1087, NGC 2967, NGC 3023, NGC 4030, NGC 4123, and NGC 4517A were observed with the South African Large Telescope (SALT). In all 34 H<sup>II</sup> regions, oxygen abundances were determined through the "counterpart" method (C method). Additionally, in two H<sup>II</sup> regions in which we detected auroral lines, we measured oxygen abundances with the classic Te method. We also estimated the abundances in our H<sup>II</sup> regions using the O3N2 and N2 calibrations and compared those with the C-based abundances. With these data, we examined the radial abundance distributions in the disks of our target galaxies. We derived surface-brightness profiles and other characteristics of the disks (the surface brightness at the disk center and the disk scale length) in three photometric bands for each galaxy using publicly available photometric imaging data. The radial distributions of the oxygen abundances predicted by the relation between abundance and disk surface brightness in the W1 band obtained for spiral galaxies in our previous study are close to the radial distributions of the oxygen abundances determined from the analysis of the emission line spectra for four galaxies where this relation is applicable. Hence, when the surface-brightness profile of a late-type galaxy is known, this parametric relation can be used to estimate the likely present-day oxygen abundance in the disk of the galaxy.

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### Keywords

Galaxies: abundances, Galaxies: general, HII regions