

Optical and infrared observations of the young SMC "blob" N26 and its environment

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High-excitation compact HII regions of the Magellanic Clouds are sites of recent massive star formation in low metallicity environments.

Detailed study of these regions and their environments using high-spatial resolution observations is necessary to better understand massive star formation, which is still an unsolved problem. We aim at a detailed study of the Small Magellanic Cloud compact HII region N26, which is only $\sim 4''$ in diameter. This study is based on high spatial resolution imaging ($0''.1$ - $0''.3$) in JHKs and L bands, using the VLT equipped with the NAOS adaptive optics system. A larger region (50×76 pc) was also imaged at medium-spatial resolution, using the ESO 2.2m telescope in optical wavelengths. We also used the archival data from the IRSF survey and the Spitzer Space Telescope SAGE-SMC survey.

Our high-resolution data of the compact high-excitation HII region N26 reveal a new, bright component (C) between the two already known optical components A and B. Components A and C are resolved into several stars. Component A is the main ionization source of N26 and coincides with the radio continuum source B0046-7333. A new compact HII region with very faint $\lambda 5007$ emission is discovered. In the mid-IR, our field resembles a shell formed by filaments and dust clumps, coinciding with the molecular cloud SMCB2. N22, located in the center of the shell, is the most excited HII region of the complex and seems to have created a cavity in SMCB2. We derive nebular parameters from spectra, and using color-magnitude and color-color diagrams, we identify stellar sources that show significant near-IR excess emission, in order to identify the best YSO candidates.

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Comments:

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