

# Nature of central emission nebulae in the dwarf galaxy NGC 185

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In this paper we present new optical observations of NGC 185 galaxy that are intended to reveal the status of supernova remnants (SNRs) in this dwarf elliptical. Our deep photometric study with the 2-m telescope at Rozhen National Astronomical Observatory through narrow-band  $H\alpha$  and [SII] filters has revealed complex structure of the interstellar medium in the center of the galaxy, implying the presence of more than one SNR, previously known in this galaxy. Additionally, we carried out spectroscopic observations using the SCORPIO multi-mode spectrograph at the 6-m telescope at Special Astrophysical Observatory of the Russian Academy of Science, both in low and high resolution modes, to confirm the classification of the SNR candidates and to study the kinematics of the detected nebulae. Our observation detected enhanced [SII]/ $H\alpha$  and [NII]/ $H\alpha$  line ratios, as well as relatively high expansion velocities of the observed nebulae, motivating the classification of these sources as SNRs. We have found that NGC 185 hosts at least two optical SNRs, and possible one HII region. We re-analyzed archival XMM-Newton observations, which indicate the presence of an extended source in projection of one of optical SNRs, whereas the archival VLA radio image shows weak, unresolved emission in the center of NGC 185.