Filamentary Hα structure in the milky way

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Abstract

The first part of this thesis presents the first results of a search for new optical supernova remnant candidates and other filamentary objects on films produced by the Anglo-Australian Observatory/UK Schmidt Telescope Hα Survey. Sixty-one fields, or 26 percent of the Galactic plane survey fields, have been visually examined. This resulted in the detection of four new large diameter filamentary structures, and the discovery of extensive new optical emission in two previously known optical supernova remnant candidates.

The second part of this thesis presents results of a study we made using the FLAIR instrument on the UK Schmidt Telescope to obtain optical spectra of several filaments in RCW 114, a filamentary nebulae of about 250 arcmin diameter. These confirm that the emission is being produced by the interaction of the shock wave of a supernova remnant with the surrounding interstellar medium. We also obtained narrow-band Hα+[N II] and [S II] images to examine the spatial variation in ionisation structure.

The third part of this thesis gives the result of a search using films from the UKST Hα Survey where the locations of 86 Galactic supernova remnants were examined for optical emission. From these we had likely detections of 8 objects and possible detections of 4 others. We have discovered a new loop of emission nebulosity, 10° in diameter, which we have named the Coalsack Loop.
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Publications


Certification

I certify that the work presented in this thesis is my own, except where stated and or referenced as otherwise.

Andrew Walker
July 2006
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