several HI features near the ionization boundary of the H II region. The H II region contains a total continuum flux of 13 Jy at λ21 cm and has a peak emission measure of 15,400 cm⁻⁶·pc. The emission cuts off sharply on the east side of the nebula, but fans out in a larger region of low intensity in the other directions.

An HI feature, overlapping an adjacent dark cloud, closely following the steep edge of the continuum emission, indicates that dissociation of molecular gas near the ionization boundary is taking place. Several other HI features may be linked to the dissociation zone around the H II region. These features contain a total of several thousand $M_\odot$.


The very extended ratio source BG2107+49 lies in the galactic plane and has a cometary “head-tail” structure similar to the extragalactic source 3C129. However, it has a very flat spectral index, unusual for an extended extragalactic source. New observations of this peculiar object have been made in various spectral regimes in an attempt to clarify its nature. These include HI absorption measurements at Westerbork, VLA continuum observations and CCD observations with the C.F.H.T. These data will be presented, demonstrating that the radio source is probably extragalactic.


Fabry-Pérot interferometry at Hα and efficient image-processing techniques have allowed the measurement of nearly 41,000 radial velocities across the H II region S142. The mean $V_{LSR}$ is $-35.6 \pm 0.1$ km s⁻¹ and the standard deviation of the velocity distribution is 12.5 km s⁻¹. The observed H-velocity field is interpreted as a systematic expansion of the ionized gas; a velocity gradient in the plane of the sky of 1 km s⁻¹·pc⁻¹ is observed away from the core of the associated molecular cloud. Several features of the morphology and of the observed kinematics of S142 are in close agreement with the predictions of the “champagne” model of Tenorio-Tagle (1979).

*Spectrophotometry of Emission Nebulae in the 5000–6000 A Spectral Region*, C. Pritchett and C. Grillmair, University of Victoria.

High-sensitivity spectrophotometry has been obtained for the planetary nebulae NGC 7027, NGC 6210, and IC 351, and the bipolar nebula AFGL 2688. The observations of NGC 7027 show an emission feature at 5624 Å which we tentatively attribute to the molecule H₂ (for which laboratory spectroscopy has been obtained by Herzberg and collaborators). For the first time, diffuse interstellar bands (at 5780 Å and at 5796 Å) have been found in absorption against the continuum of NGC 7027; their existence may place interesting constraints on the origin of the diffuse interstellar bands.


The physical processes which give rise to the observed radio continuum properties of SNR are modelled from existing theory. Our model utilizes Bell’s (1978) formulation of the diffusive shock acceleration mechanism to account for the injection and distribution of relativistic electrons. The observed slope and absolute level (intercept) of the surface brightness – diameter relation is accounted for by the model.