Long-Slit 2-Dimensional Spectra of the Giant Halos Around NGC 6543 and NGC 6826.

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We have observed the large, faint halos around NGC 6543 and NGC 6826 with the Isaac Newton Telescope, using IPCS and CCD (2-dimensional) detectors. Line intensities are measured every 1.5 arcsec over a total slit length of 3 arcmin (IPCS) or 2 arcmin (CCD). Several slit positions across the halos were observed, so as to obtain average properties of these two regions. Halo spectra are compared with spectra of the bright core, so as to distinguish between reflection by dust and genuine thermal emission; the halos are not reflection nebulae.

We show that the bright edges of the NGC 6826 and NGC 6543 giant halos are not at the Strömgren radius; O^{++} does not recombine to O^{+} there and the entire systems are optically thin. Average halo properties and halo masses are estimated. The [O III] electron temperature is significantly higher in the Halo than the centrally ionized nebula; we find T_e(halo) = 16 000 K and 13 000 K for NGC 6543 and NGC 6826 respectively. Upper limits of the electron density are deduced from [O II] line ratios for NGC 6543 but we measure $N_e = 550$ cm^{-3} for NGC 6826.

The mass ratios (halo/core) are $\geq$0.7 and 0.09 for NGC 6543 and NGC 6826 respectively. These are calculated from the Hβ flux measured at slit positions we judge to be representative of the Halo. Abundances of N, O and Ne in the halos are not significantly different to those in the cores.

Around NGC 6543 we present results also for the density, temperature and composition of the large bright knot due west of the PN core. Its properties appear to differ from the rest of the Halo.

We also give results on extended thermal emission from the compact nebula BD+30°3639 which indicate that its Halo also is not a reflection nebula.

Full results, including photo-ionization models, will be published in Monthly Notices of the Royal Astronomical Society.

S. Torres-Peimbert (ed.), Planetary Nebulae, 195.