

H α PROFILES OF SELECTED CANDIDATES FOR PROTO-PLANETARY NEBULAE

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The high-dispersion H α line profiles of the candidate stars for proto-planetary nebulae (PPNs) are presented. Samples include mostly F supergiant stars. Volk and Kwok (1989) summarized four classes of stars which had been described in various literature as PPNs. They selected nearly one hundred new candidates of PPNs due to IRAS data. Our goal is to make clear the mass-losing phenomena and to establish the adequate models for the explanation of observed data from such stars. F supergiant stars also attract our attention to the spectroscopic variability in connection to their extended, rarefied and therefore complicated atmosphere. Observations were made at the Okayama Astrophysical Observatory with the 188-cm reflector and its coude spectrograph. We used the intensified Reticon as the detector which has one dimensional array of 1024 pixels. The size of one pixel is 25 μm and corresponds to 0.13 Å and 5.9 km/sec at H α . Our stellar samples are HD 46703, HD 56126, HD 112374, R CrB, HD 161796, 89 Her, IRAS 18095+2704, AFGL 2343, HD 187885, and UU Her. We obtained the H α profiles and found a couple of absorption lines like the FeI λ 6569, FeII λ 6516, and CII λ 6587 among them. An express report and a short discussion about a part of these samples was already presented by Tamura and Takeuti (1991). Subsequent reports appeared and will appear in the articles of Tamura, Takeuti, and Zalewski (1992); Tamura and Takeuti (1992). We show various kinds of H α profiles which consist of absorption and emission components and show clear evidence of activity in the extended atmosphere. We classify them into (i) P Cyg type profile, *e.g.* 89 Her, (ii) inverse P Cyg type profile, *e.g.* HD 187885, (iii) profiles with the central reversal at the bottom of absorption, *e.g.* HD 46703, (iv) profile with shoulder emission components, *e.g.* HD 56126, (v) asymmetric absorption profile, *e.g.* AFGL 2343. Concerning HD 161796 the H α profile seems to have only an absorption component. It should be attributed to time variations, because the profile observed by Luck *et al.* (1990) is similar to (iv). In addition to a wide variety of the H α profiles we have noticed their time variations ranging over different time spans, month, day, even in several ten minutes. Arellano Ferro (1985) noticed the change of H α profiles of luminous yellow supergiants in various time scales too. We obtained radial velocities and compared with the expected values by the galactic rotation. We can recognize our sample stars are far from the galactic kinematics of disk members.

References

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