

ABSTRACTS OF CONTRIBUTED PAPERS

CENTRAL STAR OF NGC 3132: A VISUAL BINARY

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A faint companion to HD 87892 ($V=10.07$, $B-V=+0.09$, $U-B=+0.10$, Sp.A2) has been discovered with the 3.6 m telescope (prime focus) of the European Southern Observatory at La Silla having the following parameters: separation $\psi = 1''.65$, position angle $\theta = 226^\circ.3$. The companion was detected on plates taken in the U system (IIIa-J baked + UG1) and appears to be about $\Delta m_U \approx 4.5$ mag fainter than the main component; it is almost invisible in the nearly visual system having $\Delta m_{vis} \approx 4.8$ mag. Contrary to the eccentric position of HD 87892 the companion lies in the axis of symmetry of the nebula. For the given reason the companion can be considered as the actual planetary nucleus. Assuming that its temperature is approximately $T_* \approx 10^5$ °K and the distance of the nebula $d \approx 0.9$ kpc, the following parameters of the nucleus were estimated: $L_*/L_\odot \approx 110$, $R_*/R_\odot \approx 0.035$. The physical association of HD 87892 with its visual companion is probable. (Paper will appear in Astronomy and Astrophysics.)

A SHORTLIVED, DEEP CONVECTIVE ENVELOPE FOR HIGHLY EVOLVED, BLUE STARS?

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An interesting new phenomenon was encountered while evolving a star with a core mass, M_C of $0.8 M_\odot$ and with a small envelope mass ($0.015 M_\odot$) away from the red giant branch towards the nuclei of planetary nebulae, while taking the helium shell flashes into account. It was found that the top of the intershell carbon pocket (the carbon-enriched region in between the hydrogen- and helium-burning shells left behind by the flash) was expanded outwards and cooled immensely; namely, cooled to near $20,000^\circ\text{K}$! This means that the intershell carbon pocket was lifted out to near the photosphere, right into the shallow outer convective envelope surrounding the hydrogen- and helium-ionization zones! The carbon opacity at these cool temperatures is great. It seems likely that all the layers from the outer regions of the intershell carbon