A late He-flash just in Time for ISO ?

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The peculiar new object ($\alpha_{2000} = 17^h52^m32.7^s, \delta_{2000} = -17°41'08''$) in Sagittarius discovered by Y. Sakurai (IAU Circ. 6322 (1996)) first classified as a slow nova turned out to be a star experiencing a late He-flash. The only other examples in historical times are V605 Aql, the central star of A 58 in 1919 and possibly FG Sge. The extremely H-poor central nebulae in A 30 and A 78 are considered the remainder of late He-flashes that happened thousands of years ago.

One of the ISO projects of the Innsbruck group is aimed at the study of hot dust around so called "born-again" planetary nebulae (PNe), objects whose central stars have suffered this late He-flash, see Iben et al. (ApJ 264, 605 (1983)) for details. To take full advantage of such an event happening before our eyes, observations have been secured of the star itself as well as of the old PN surrounding it. On an H_α image a faint nebula of ca. 30 arcsec diameter can be seen surrounding the bright central object. A spectrum of this nebula shows it to be a normal PN of rather high excitation, judging from the strong [O III] lines. The spectrum of the central star shows an atmosphere with a wealth of absorption lines. In general the spectrum is similar to that of supergiants but additional lines including signatures of C I, C II, N I, O I, Si II and He are present whereas the H-lines are weak. Preliminary analysis shows that lines from some s-process elements are also present. Radial velocity measurements yield a value of $\approx$ 100 km/s for both nebula and central star, indicating that both are indeed physically associated. NIR data obtained by DeNIS (Epchtein et al. ApSS 217, 3 (1994)) only a week after the spectra yield the following brightnesses: $m_I = 10\overset{m}{.}05 \pm 0\overset{m}{.}07$, $m_J = 9\overset{m}{.}10 \pm 0\overset{m}{.}12$ and $m_K = 8\overset{m}{.}67 \pm 0\overset{m}{.}10$. The resulting $(I-J) = 0\overset{m}{.}95 \pm 0\overset{m}{.}12$ corresponds to a colour of stellar type K4 to M1 while $(J-K) = 0\overset{m}{.}43 \pm 0\overset{m}{.}13$ is typical of F6 to G8. Therefore this object can not be explained by a normal stellar photosphere. A monitoring program will be essential to follow the development of this exciting object. The development of the spectrum will be highly interesting to study. The Balmer lines of hydrogen are likely to decrease in strength as it will get destroyed by mixing. At the same time the lines of s-process elements like e.g. Zr, Ba and Y might become more prominent; FG Sge has a history of such a development, see e.g. Stone et al. (PASP 105, 755 (1993)). It is unclear on what time scale this will take place, but if the evolution of V605 Aql/A 58 and FG Sge is any indication, Sakurai's object is well worth close monitoring. To this end preparations are underway to set up an observing campaign together with colleagues from, Chile, New Zealand and South Africa employing both photometry and spectroscopy.

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