

WATCHING STARS EVOLVE: RAPID EVOLUTIONARY CHANGES OF THE POST-AGB STAR – FG SGE

E. F. GUINAN

Villanova University
guinan@ucis.vill.edu

YU. S. EFIMOV

Crimea Astrophysical Observatory
efimov@elvis.astro.nwu.edu

AND

S.J. MARGHEIM

Villanova University
guinan@ucis.vill.edu

The variable post-AGB star FG Sge has provided an unique opportunity to study phenomenon which may be characteristic of the post-PN stage of stellar evolution. FG Sge is the central star in the 36-arcsec PN He 1-5 that over the last 50 yrs has been undergoing rapid evolutionary changes. Most notable are changes in temperature, luminosity, chemical composition and pulsation period. Starting in mid-1992, the star has undergone several large dimming events from which it has yet to recover. These events closely resemble the dimming events commonly observed in R CrB stars which result from dust formation in ejected envelopes. From all the evidence, it now appears that FG Sge has evolved into a R CrB star.

In this paper we first summarize the recent photometric history of the FG Sge from UBVRI photometry obtained during 1990-1997. We then combine these data with earlier photometry to define the star's light behavior over the last 100 yrs. The photometry is also combined with available spectroscopic polarimetric, and IR observations. Particular attention is given to comparing FG Sge's post-dimming behavior with contemporaneous observations of R CrB itself, also done on the same photometric system.