

**HST OBSERVATIONS OF THE NUCLEI OF EGB 6 (0950+139)
AND ABELL 58 (V605 Aql)**

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This paper deals with the central stars of two large, low-surface-brightness planetary nebulae: **V605 Aquilae**, central star of **Abell 58**, and **0950+139**, central star of **EGB 6**. Both of these nuclei are associated with compact emission-line nebulosities, which are unresolved from the ground. We obtained images with the Faint Object Camera (FOC) on the *Hubble Space Telescope* of both objects, in order to determine the nature of the compact nebulae.

V605 Aquilae experienced an outburst during 1917-1921 to ~ 11 th mag, but the star is currently fainter than 20th mag. In 1921 it showed the spectrum of a hydrogen-deficient carbon red giant. The R CrB-like spectrum at maximum suggests that the outburst may have represented a born-again episode following a final helium shell flash in a hot white dwarf.

Ground-based images of V605 Aql reveal an unresolved nebular knot, which is extremely hydrogen deficient. An *HST* image, obtained with the FOC in the light of [O III] 5007 Å, shows that the knot is resolved into a patchy nebula with a diameter of about $0''.5$. No star is visible, presumably because of dust in our line of sight.

The present diameter of the compact nebula is consistent with ejection around 1920 at approximately a red-giant escape velocity, and thus is consistent with the suggestion that V605 Aql experienced a final helium shell flash around 1920 that temporarily turned it into a “born-again,” hydrogen-deficient red giant. The remarkably short timescale probably requires a rather high stellar mass, $\sim 1M_{\odot}$.

0950+139 is the 16th-mag central star of the large, very faint PN EGB 6. Ground-based spectra of the star reveal a hot (70,000 K) DA white dwarf, with superposed [O III] and Balmer emission. The emission-line component might arise from (a) ongoing mass loss from the white dwarf; (b) ejection during a “born-again” phase, as in V605 Aql; or (c) ablation from a close (few AU) substellar companion.

In order to test these explanations, we obtained FOC images in H β and [O III] 5007 Å. The images unexpectedly show a point-like companion, at a projected distance of $0''.18$ or ~ 80 AU, which appears to be the source of the entire emission-line component. We speculate that the emission-line companion is associated with a dM5 component discovered in the IR by Zuckerman et al. in 1991 and recently confirmed by Fulbright & Liebert. However, the object is much too far from the white dwarf to be losing mass by ablation, and it remains unclear why it should be surrounded by a compact nebula.