Search for pulsations in H-deficient planetary-nebula nuclei

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We have observed with continuous photometry some hydrodgen-deficient Planetary Nebula Nuclei (PNNs) with bipolar envelopes to search for pulsations, and to characterize the pulsatons found. Our sample includes the "hybrid PG 1159" stars Abell 43 and NGC 7094 which are shown to have extremely long period $g-$mode pulsations between 38 and 101 min, driven by the $\kappa-$mechanism. These low amplitude pulsations were quite stable. We found the PG 1159/E star VV 47 and thePG 1159/A stars JN 1 and NGC 6850 as highly variable pulsators.

For NGC 246, a PG 1159/lgA object, we observed extremely rapid changes of pulsation amplitudes and frequencies, apparently with life time of a few hours. For this object we found a period of 72.5 minutes, which seems to keep its phase during 3 years, sometimes with a double or triple bumped pulse-shape. We interprete this as a sign of binarity, indicating a common envelope surrounding both objects.