

AG Pegasi

AG Peg is known as the slowest symbiotic nova on record that took over a Century to fade back to its former brightness.

The nova eruption went unnoticed at the time and AG Peg was originally catalogued as BD+1104673. The first spectra were taken by W P Fleming in 1894 and A J Cannon in 1916 noted the peculiar Be nature & included it within a list of stars having similar spectra to P Cygni. P W Merrill also noted the resemblance to P Cygni and detected changes in the spectrum between 1916 and 1921. We now know that P Cygni itself is known as a Luminous Blue Variable (LBV), a highly massive, hot and luminous star near to the main sequence. Although there is evidence of outburst activity around the 17th century, P Cyg is now very slowly increasing in brightness as it's temperature cools.

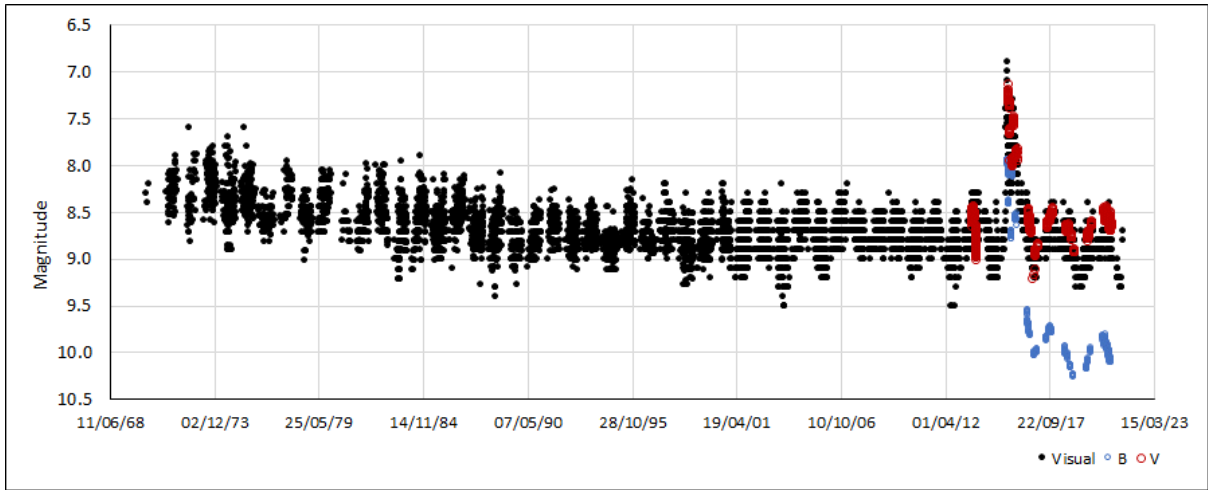
The nova eruption was uncovered by K Lundmark in 1921 following examination of catalogue and photographic plate records. Those historical records indicate AG Peg was approximately magnitude 9 until the mid-19th Century when it slowly rose to magnitude 6 peaking around 1880 before even more slowly fading below magnitude 8 in the second half of the 20th Century. The fade continued at a rate of 0.02 mag/year until 2002 when AG Peg finally reached a mean magnitude of 9.0.

The AG Peg system consists of a cool M3 giant interacting with an active hot sub-dwarf with a WN6 spectrum. The orbital period is 818 days and there is cyclic variation due to the heating and illumination of the side of the M3 giant facing the hot sub-dwarf and the system components orientation towards the Earth. The cyclic variations during the long nova fade were distorted by the declining activity of the sub- dwarf. The determination of the properties of the binary system led to AG Peg being classified as a Symbiotic star (or ZAND). One of the more dramatic consequences of a system of this type is that some symbiotic stars can undergo small amplitude outbursts. The distance of the AG Peg system is estimated to be 800 parsecs.

By 2007 the mean magnitude had recovered to 8.8 with a well-defined cyclic variation. Then in June 2015, AG Peg underwent a classical ZAND type outburst lasting over seven months and peaking at magnitude 7.3. Subsequently the main variation has been limited to the cyclic variation that has been relatively steady with a range of approximately 0.5 magnitude.

The light curve illustrates the final stages of the slow nova decline and the transformation into a ZAND star including the first outburst that was only a magnitude fainter than the peak of the original nova eruption.

AG Peg lies just three degrees north following epsilon Peg (Enif) and can be seen all year round from the UK apart from the second half of February. Outside of outburst AG Peg is best observed with large binoculars or a small telescope and is a worthy target for spectroscopy.



094·02

6° FIELD DIRECT

AG PEGASI 21h 51m 02·0s +12° 37' 32" (2000)

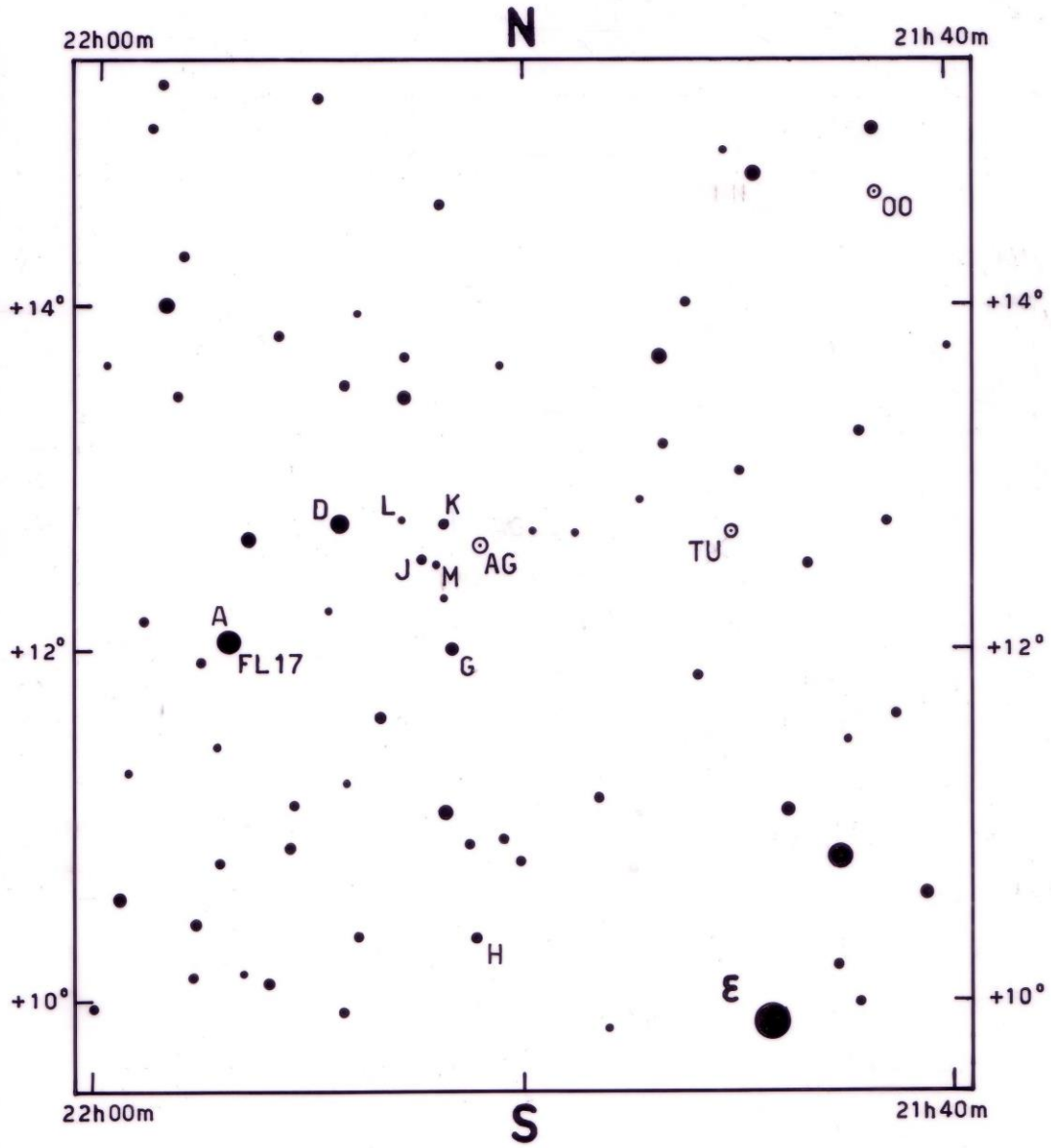


CHART:
MILLENNIUM SA
SEQUENCE:
TYCHO 2 VJ

A 5·5	J 8·2
D 6·6	K 8·7
G 7·6	L 9·5
H 7·9	M 10·0

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