* **"Secular Light Curve of Comet 107P/Wilson-Harrington in the 2009 Apparition"** **http://webdelprofesor.ula.ve/ciencias/ferrin**

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ALERT UP TO 091210
COMET 107P/WILSON-HARRINGTON, DOUBLED PEAKED ACTIVITY

Comet 107P/Wilson-Harrington is a comet-asteroid transition object that exhibited activity in 1949 and has remained inactive ever since. In the Atlas of Secular Light Curves of Comets:

http://arxiv.org/ftp/arxiv/papers/0909/0909.3498.pdf

this object has a photometric age of 760 comet years, which implies that it is a methuselah comet (age > 100 cy), thus it must be very near to extinction and its activity, if any, must be very feeble. **Observations published after Nov. 16th, +23 days after perihelion show an enhancement of + 0.7 mag.** The enhancement in 1949 was 0.74 mag, and in 2005 was 0.52 mag. The plot showing the enhancement in 2009 is :

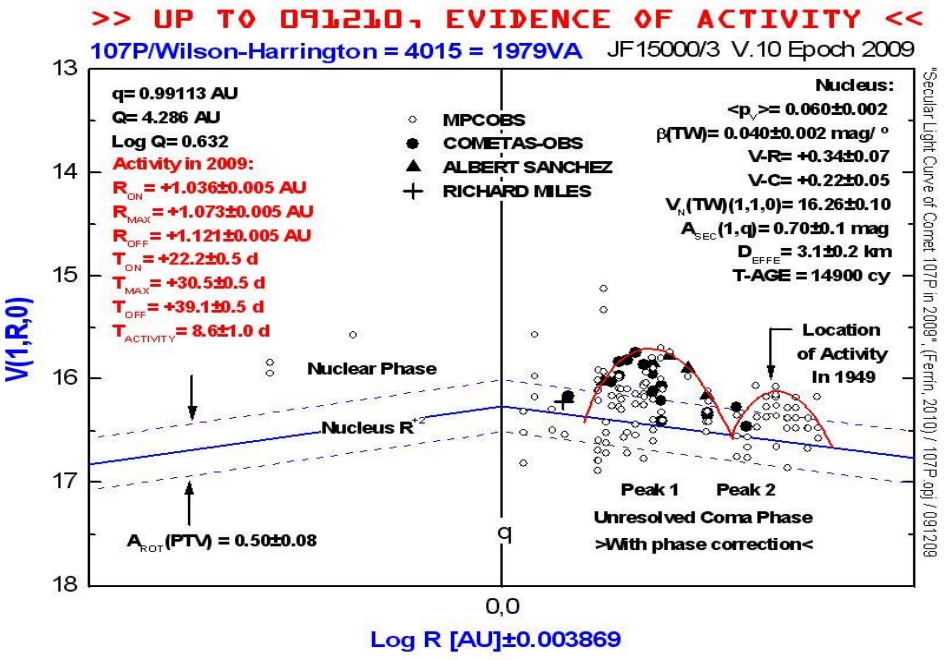

Figure 1. The above plot is the secular light curve of comet 107P in the 2009 apparition. **There is evidence of activity after November 16th**, +23 days after perihelion, of maximum amplitude +0.70 magnitudes and a second peak of smaller activity. Observations should continue to clarify this behavior.

The enhancement looks real because is based on photometry using the CMC = Carlsberg Meridian Catalogue 14 which claims a photometric error of ±0.17 mag at the level of magnitude 17th, and because the photometry comes from several independent observers and observatories.

However, the comet is not going to exhibit a coma because the amplitude of the enhancement is below the Threshold Coma Magnitude, TCM. TCM is defined in the *Atlas*, and has a current value of 3.0±0.3 magnitudes. If a comet has an enhancement below TCM ***above*** the nucleus, then the comet has a coma but it is contained within the seeing disk and will not be detected. The only exception may be if the comet is imaged in a very large telescope, with very good seeing, and in a very deep exposure.

Conclusion

What is needed at this stage is **high precision photometry** to confirm or discard this activity and to quantify the enhancement and the turn off point. There is a nice comparison area (3C454.3) 15° from the comet by González-Pérez et al. (An. J., 122, 2055-2098) located at RA22h 53m 58s, DEC+16° 08' 54", containing UVBRIJHK photometry. The comet exhibited activity +42 d after perihelion in 1949. The corresponding date in 2009 is December 3rd. High precision photometry is encouraged.

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