29P/Schwassmann-Wachmann 1 — orbital distribution of outbursts

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The orbital distribution of outbursts of brightness for the periodic comet 29P/Schwassmann-Wachmann 1 is studied. Despite the fact that the perihelion distance is 5.722 au, the comet exhibits an enhanced activity. We found a so far undiscovered significant result that the increased cometary activity starts on a pre-perihelion arc and continues after the aphelion passage in spite of the large heliocentric distance. We identified outbursts of comets in the publication of Kamel (1991), because this publication extends the series of records of the outbursts in the past. The publication of Kamel contains 78 outbursts including 3 overlapping with a catalog of ICQ, where we found 101 other outbursts and 9 outbursts were obtained from the data of Skalnate Pleso Observatory. Despite the large heliocentric distance and small difference between the aphelion and the perihelion distances (0.53 au), the obvious dependence on the gradual orbital approach of the comet was found. The enclosed figure (analogous to Hughes, 1975) shows the positions of 29P/Schwassmann- Wachmann 1 around its orbit at the time of the outbursts.

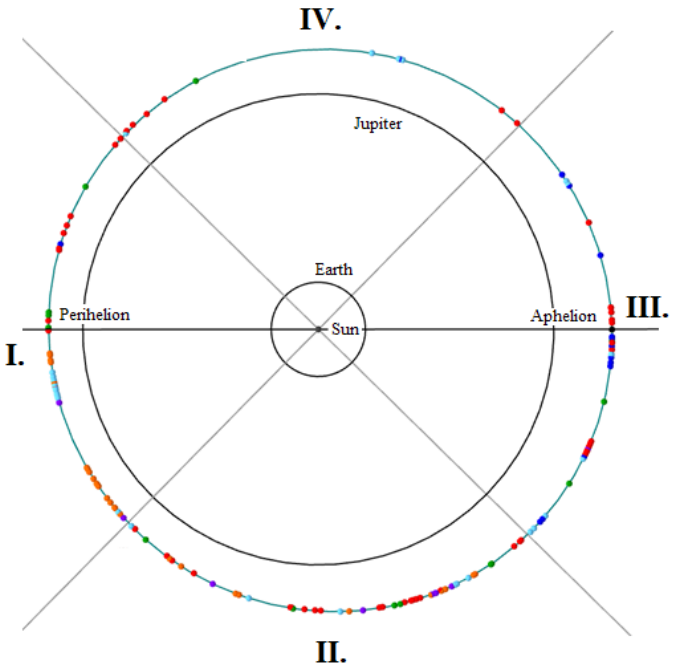

Figure: The positions of 29P/Schwassmann-Wachmann 1 around its orbit at the time of the outbursts.

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References: Green, D.W.E.(editor), 1979–2010, The International Comet Quarterly (ICQ), all volumes from 1(2) to 32(1) except 17(3); Hughes, D.W., 1975. Cometary outbursts — A brief survey. Royal Astronomical Society, Quarterly Journal, vol. 16, 410–427; Kamel, L., 1991. The Structure of the Nuclei of Comets as Evidenced by their Light Curves. Uppsala University, Uppsala.