Activity in Distant Comets by Dust Tail Analysis: A Case of Comet Levy 1990XX

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Abstract

Some of new comets show the extended dust tail, which was formed at large heliocentric distance such as 10 A.U. or more. This "old" tail can be used to study the cometary activity in the large heliocentric distance. Moreover, the history of the activity can be explored by the analysis of the intensity distribution of the tail on the basis of some assumptions. We analyzed the dust tail of Comet Levy 1990XX, which was observed on August 20 1990 with 105-cm Schmidt telescope at the Kiso Observatory, and found a gradual increase of dust production rate from 15 A.U. as shown in figure. This result indicates that volatile material such as CO₂ or CO controled the cometary activity of this new comet at the large heliocentric distance.

Relative Production-Rate Variation with Heliocentric Distance derived from the Dust Tail Analysis of Comet Levy 1990XX.