

Outburst of Comet 217P/LINEAR

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Comet 217P/LINEAR is a short-period comet detected by the Lincoln Near-Earth Asteroid Research program as the name indicates. The discovery was on 2001 July 11, and was confirmed as a Jupiter family comet having a period of 7.8 years. Because the most recent perihelion passage was expected on 2009 September, we monitored this comet with the Kiso 105 cm Schmidt Telescope. The images revealed a day-by-day variation of the 217P/LINEAR shape, indicating an outburst occurred. Since our observation started before the outburst event, we examined the morphological evolution of the expanding dust cloud produced by the outburst[1]. It was found that the dust cloud expanded at a velocity of $120\text{--}140\text{ m s}^{-1}$ and that the comet became brighter by 1.7–2.3 mag. Using the observational result, we estimated that the onset time was 2009 October 13.4, and that the total mass released by the outburst was in the range of $10^6\text{--}10^9\text{ kg}$. No fragments or split nuclei brighter than 18.5 mag (1.1 km in radius) were confirmed in our observations. Compared with other outbursts[2], we concluded that it was a relatively small event for an outburst.

Reference

- [1] Sarugaku, Y., et al.: 2010, *ApJ*, **724**, L118-L121.
- [2] Watanabe, J.-I., et al.: 2009, *PASJ*, **61**, 679-685.

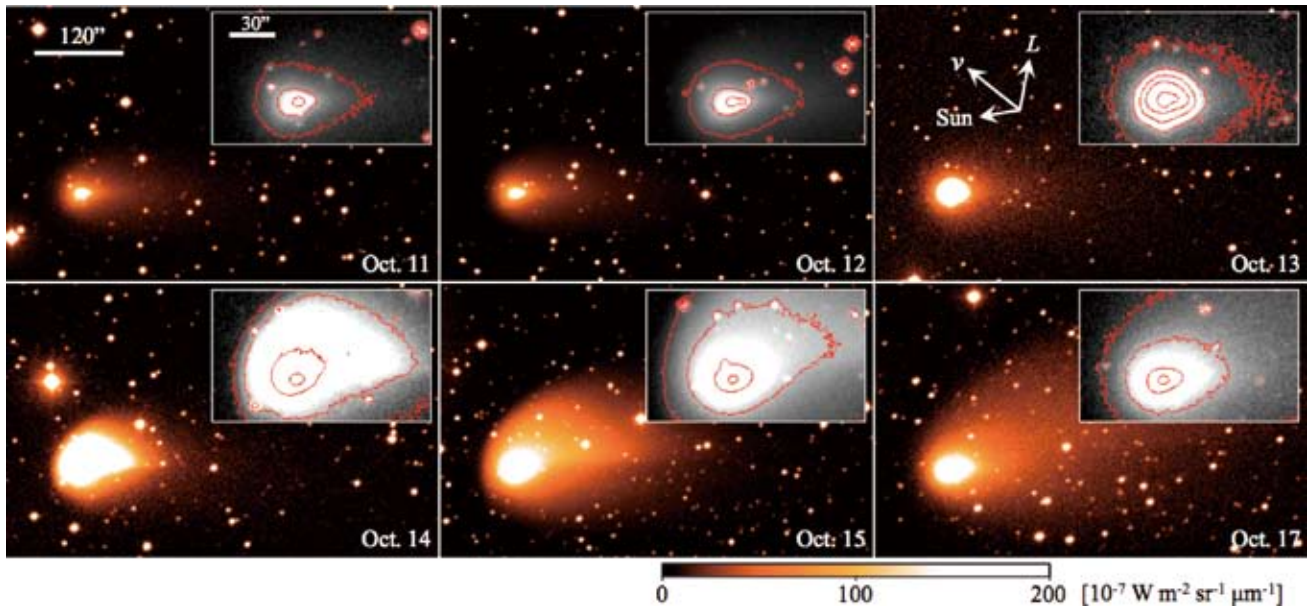


Figure 1: *Rc* band images of 217P/LINEAR observed on 2009 October 11–15, and 17. Sky brightness is subtracted. The upper right boxes show close up images near nuclei with contour lines of $10^{-4.5}$, $10^{-4.0}$, $10^{-3.5}$, $10^{-3.0}$, and $10^{-2.5}\text{ W m}^{-2}\text{ sr}^{-1}\mu\text{m}^{-1}$ from the outer side. The arrows in the October 13 image indicate the Sun direction (Sun), the angular momentum vector (L), and comet movement (v) on the projected plane, respectively. The appearances of 217P/LINEAR on October 11 and 12 were similar, but clearly changed day by day after October 13. It was found that the dust cloud expanded and was blown away by the radiation pressure.