

Polarimetric imaging of some comets at different phase angles

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The linear polarization of the scattered light by dust in some comets was observed with the 0.8-m telescope at the Haute-Provence Observatory (OHP) in France between 2009 and 2014. Comet C/2007 N3 (Lulin) was observed in March 2009 at phase angles 35° - 36° ; during the same period when 67P/Churyumov-Gerasimenko was observed (Hadamcik et al 2010). Comets C/2011 L4 (PANSTARRS) and 154P/Brewington were observed in May and October 2013 at phase angles 38° and 22° - 24° , respectively. In January 2014, comet 290P/Jager was observed at phase angles 14° - 15° . The observations were mainly carried out in the red wavelength domain to reduce gaseous contaminations. The overall shape of the coma of comet Lulin is about circular without any jet structure. The polarization in a 2700 km aperture is about 4.5%. The coma of comet C/2011 L4 is elongated in the antisolar direction, the solar position angle being 130° . The polarization in a 5650-km aperture is about 5.7%. Jet-like structures have been noticed in position angles 225° - 335° in the treated intensity images. A correlated higher-polarization region is noted on the corresponding polarization map. The coma of comet 290P is nearly circular in shape. The polarization in a 3900-km aperture is found to be -1.54%. The polarization values of these four comets will be compared to observations of other comets at similar phase angles and wavelengths.

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References: Hadamcik E., Sen A.K., Levasseur-Regourd A.C., Gupta R. and Lasue J. 2010. Polarimetric observations of comet 67P/Churyumov-Gerasimenko during its 2008-2009 apparition, *Astron. and Astrophys.*, 517, A86.