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The modelling of cometary dust tail striae

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Abstract

Several high-production rate comets have displayed dust tails containing numerous striae - near-linear regions of enhanced brightness. We present a study of the striae in the tail of C/2006 P1 (McNaught) during its perihelion passage in January-February 2007, and those in C/2002 V1 (NEAT) in January 2002. Both comets were observed by the LASCO coronagraph on the SOHO spacecraft; McNaught was also observed using the SECCHI instrument on the two STEREO spacecraft. Our simulations of striae successfully reproduce many aspects of their morphology and dynamics. The results are compared to those of other striae models. Initial fits to the complex striae of C/2011 L4 (PANSTARRS), observed by the STEREO-B spacecraft, are also presented. The inferences that can be made regarding the comets' dust populations are discussed.