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Studies of comet C/2013 A1 (Siding-Spring) before its close encounter with Mars

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Abstract

The comet C/2013 A1 (Siding-Spring) comes from the Oort cloud and it will have a close encounter with Mars next October 19th, 2014. The last estimations point to an approach about 135 000 km (Farnocchia et al. 2014, ApJ, 790, 114). This will be the first time that the human being observe this kind of interaction between a comet and an inner Earth-like planet. Therefore, this is an unique and very special opportunity to study these events (Moores et al. 2014, Geophys. Res. lett, 41, 4109-4117). Despite the collision is ruled out, it is estimated that large amount of dust will pollute the Martian atmosphere. Thus, an accurate characterization of the dust environment of the comet is highly desirable (Yelle et al. 2014, Icarus, 237, 202-210). To this end, in order to determine the dust environment of the comet, we will use observations, which will be carried out at the El Leoncito observatory, and the $Af\rho$ values which will be provided by *Cometas-Obs*. We will use our Monte Carlo dust tail modeling procedure in an attempt to fit the complete observational data set. This allows us to derive the dust parameter: size distribution, ejection velocities, mass loss rate, and ejection morphology (see e.g. Moreno et al. 2012, ApJ, 752, 136). We just report here our first observational information, updated until September 3rd, 2014.