

Chaos in the Geminid meteoroid stream

Ariane Courtot, Jérémie Vaubaillon, and Marc Fouchard

IMCCE, Observatoire de Paris, France
ariane.courtot@obspm.fr

Meteoroids populate the interplanetary space and are well-known to be potential threats to satellites and spacecrafts. However, they have peculiar dynamics owing to their relatively high non-gravitational forces and their multiple close encounters. When a meteoroid stream meets with the Earth, a meteor shower is produced.

Today more than 900 meteor showers are listed by the IAU, meaning a large number of comet-like parent bodies existed in the Earth vicinity in the near past (1-100kyrs). This raises the question of the authenticity of these showers. To tackle this, we aim to better understand the dynamical evolution of meteoroids, which can be done by drawing chaos maps.

We drew chaos maps on the well-know Geminid meteor shower. Those maps reveal several dynamical aspects of the meteoroid stream. First, we will describe the influence of some mean-motion resonances with Earth and with Venus. The effect of non-gravitational forces, relatively to the mean-motion resonances, will also be discussed. Finally, I will present the different regimes of eccentricity visible in the maps.