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## The interaction of meteoroids with the atmosphere

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In this work we present the main results of the project named 'Meteor mathematical modelling of dark flight' (MeMATH), and current state and future work related to our project. The MeMATH project started in September 2020.

The main objectives of the MeMATH project are:

- i) numerical simulation of the dark-flight trajectory;
- ii) determining the search area for meteorite fragments;
- iii) the study of the ablation of large bodies.

In the first stage of the project, we developed a mathematical model for the dark flight trajectory of a meteoroid. The novelty of our model is that it considers the ellipsoidal shape of the Earth, the Coriolis effect and the centrifugal force.

In the current stage of the project, we are determining the ballistic coefficient  $\alpha$  and the mass loss parameter  $\beta$  based on the meteoroid height and deceleration.

The  $\alpha$  and  $\beta$  parameters have a great impact in the study of meteoroids from the identification of the parent body to determining the initial and final mass and finding out whether the remnant matter after ablation could result in a meteorite on the ground.

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