Author: E. SMIRNOV
Pulkovo Observatory (Russia)
Title: *"The machine-learning methods in the asteroids dynamics"*

Abstract. In asteroid dynamics, many problems require numerical integration of asteroids orbits. This approach consumes enough computer resources, especially when we try to analyse the dynamics of hundreds of thousands of asteroids. Any improvement in the orbit of the asteroid requires additional computer resources to be applied. Therefore, within the context of the increasing volume of new information, fast new methods should be applied to work with big data.

Artificial intelligence and machine-learning (ML) methods have become popular in recent years. In this study we apply the modern ML methods to the classical problems of the dynamics of the asteroid: the identification of the resonances, families, non-regular objects. It is shown, that such methods provides acceptable accuracy and requires much less computational resources.