



ABSTRACT



Rotational period determination of fortuitous asteroids

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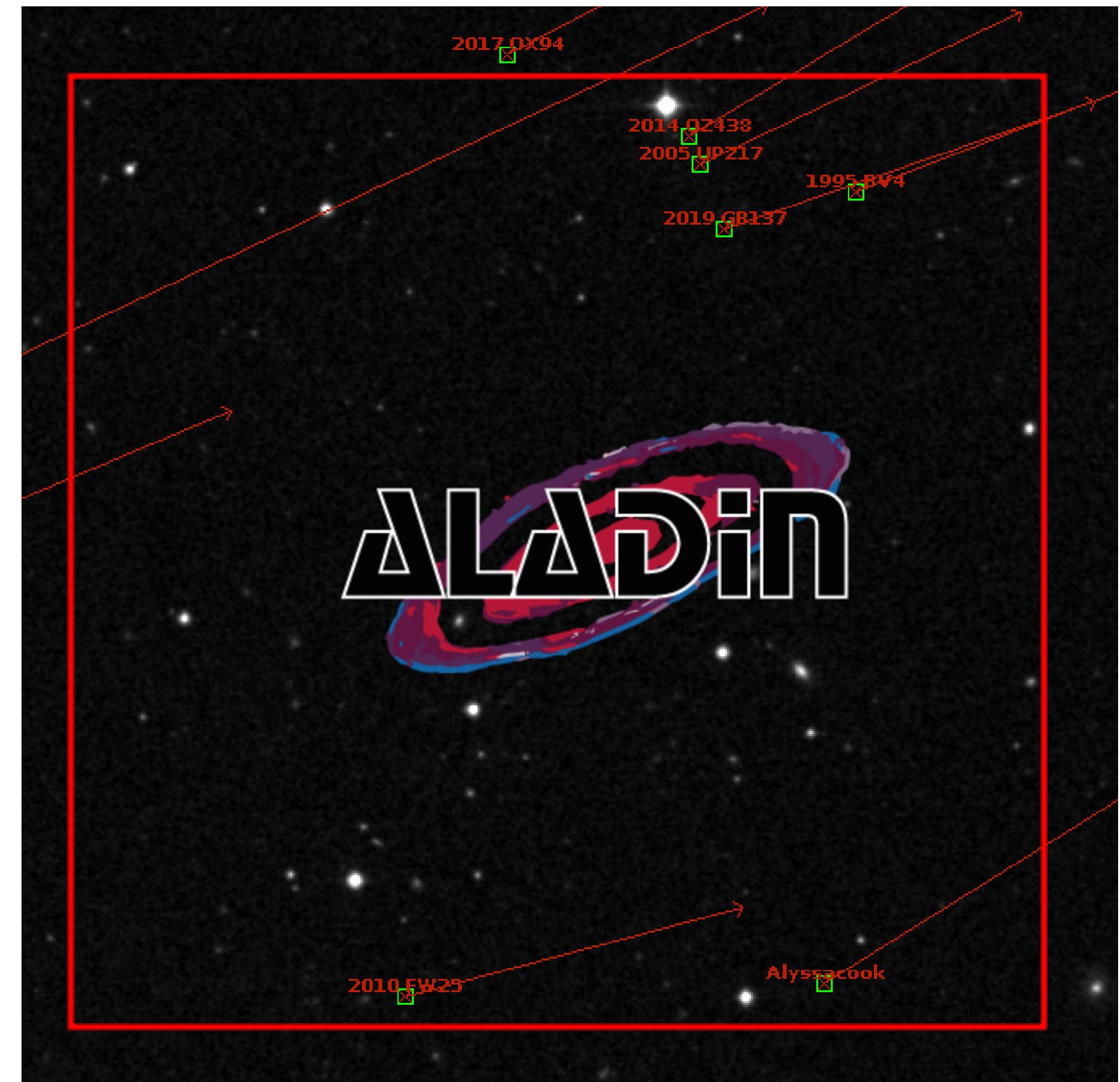
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Significance of this research

The determination of physical and rotational characteristics of minor objects in the Solar System is of paramount importance for studying such objects, allowing the inference of information about their origin and evolution. The number of well-characterized objects in relation to the current known population is very low. This project aims to combine efforts in characterizing minor objects in the Solar System through the determination of the rotational period of some of these objects.

How did we select our data

Asteroids were chosen that were within the observation field on each of the 23 nights of the year 2022 and whose apparent magnitude was below 19.5

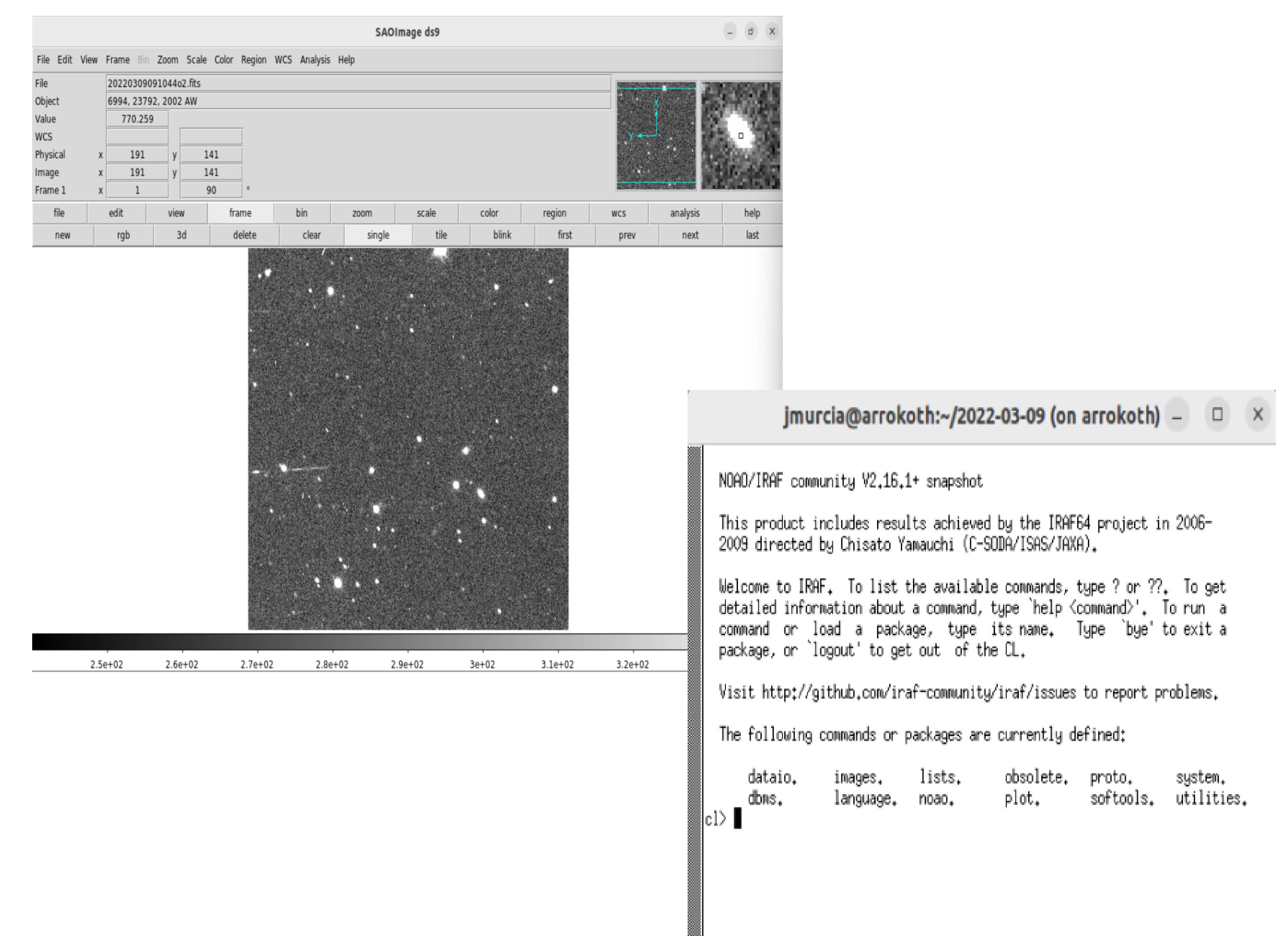


The analysis was carried with a sample of 6 asteroids belonging to the main asteroid belt

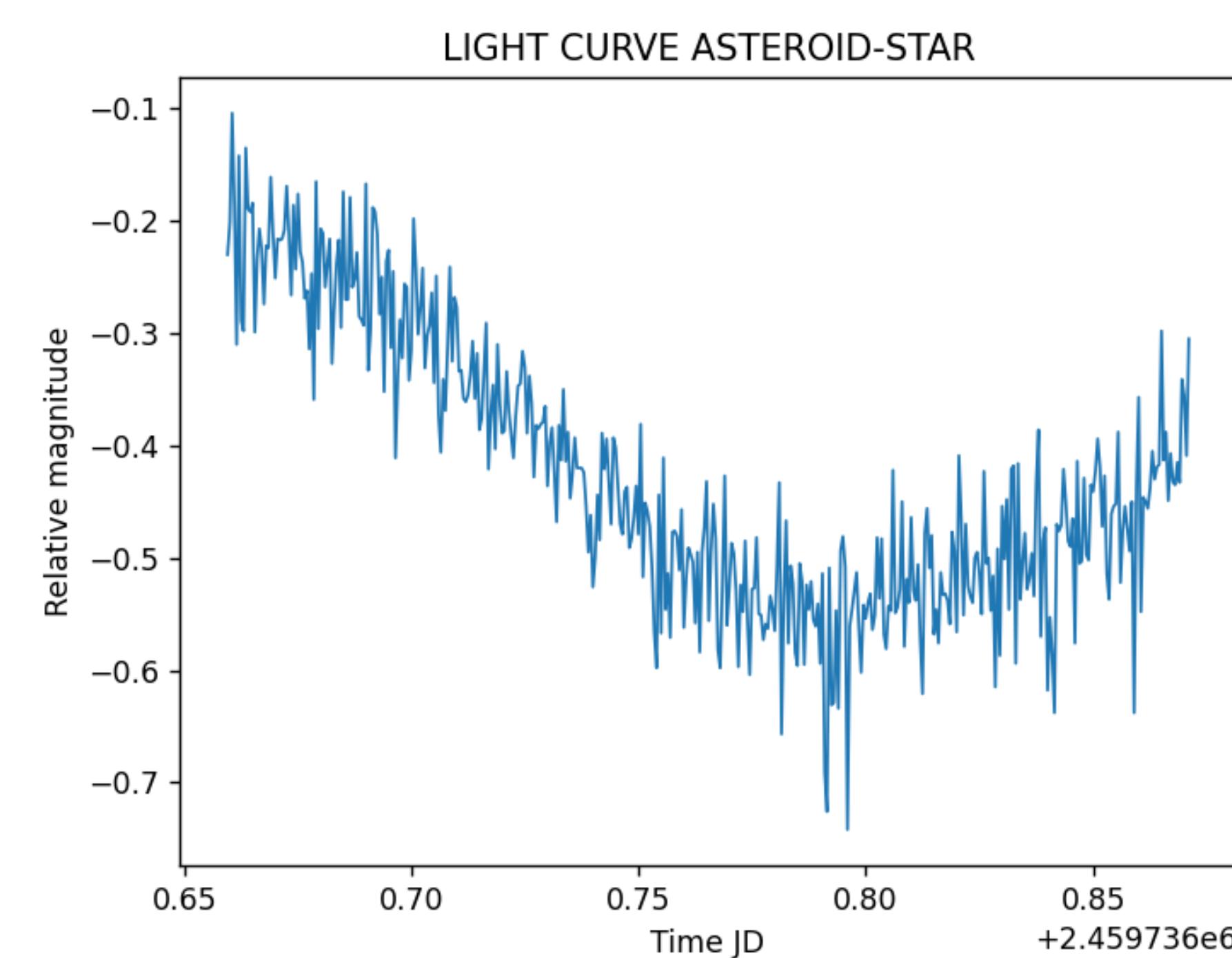
In this work we present the results of the photometric analysis of some asteroids whose rotation period has not been estimated and which we consider to be fortuitous as they are not the main objective of the photometric observations. However, they were present in the same field of view as the parent asteroid and showed sufficient brightness for photometric analysis. The images analyzed correspond to 23 nights in 2022, and were obtained from the National Astronomical Observatory of San Pedro Martir, using the 84 cm telescope. Image processing, aperture photometry, and differential photometry were performed to calculate light curves. Subsequently, a search for the value of the corresponding rotation period was carried out using Fourier series analysis..

How we process our data

The programs DS9 and IRAF were employed for image cleaning and aperture photometry.



When obtaining the light curve of the asteroid and reference stars, their magnitude difference is plotted. This allows estimating the rotation period of the asteroid using Fourier series analysis.



Results

