
GRAPHICAL PROJECTION OF THE DAILY ORBIT OF THE STAR SIRIUS ON THE PAVEMENT OF SAINT PETER'S SQUARE

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Abstract

In this paper we present geometrical projections of the daily orbit of the star Sirius on the pavement of Saint Peter's Square, in Vatican City. These projections are done - graphically and numerically - through certain sculptural motifs on top of the obelisk. These sculptural motifs reproduce the iconographic elements found on the coat of arms of Pope Alexander VII. We bring a new approach to the analysis of an internationally renowned square, which has great architectural and cultural heritage value. We make it clear that this research consists of a geometric analysis and not a historical study; that is why we show the results obtained without taking into account the intentionality or arbitrariness that Bernini's design entails.

Keywords: Saint Peter's Square, Caligula's obelisk, Star Sirius, oval

1. Introduction and preliminary remarks

This paper presents geometrical and graphical projections of the daily orbit \mathcal{C} of the star *Sirius* (the brightest star in the night sky and possibly one of the most important in the history of humanity) on the pavement of Saint Peter's Square, in Vatican City. These projections are done through certain sculptural motifs on top of the obelisk located in the centre of the square - brought from Egypt by the emperor Caligula [1]. These sculptural motifs reproduce the iconographic elements found on the coat of arms of Pope Alexander VII. In order to determine the star position, we consider the period during which the square was designed by Gian Lorenzo Bernini (from 1665 to 1677, astronomical epoch *J1677*), under commission of Pope Alexander VII. This paper is a geometric analysis and not a historical survey.

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