

## Centre of the Milky Way Galaxy

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**Abstract :** The center of our galaxy is often referred to as the 'galactic center' and has many theories associated with its true nature. Given the existence of interstellar dust and bright stars, it is nearly impossible to observe its position, about 24,000 light-years away. Due to this uncertainty, humans have often speculated what could exist at a vantage point upon which the entire galaxy spirals and revolves, with wild theories ranging from the presence of dark matter to black holes and wormholes. Data up till now on the same is very limited, and conclusions are to the best of the author's knowledge, as the only method to view the galactic center is through x-ray and infrared imaging, which counter the problems mentioned earlier. This paper examines, first, the existence of a galactic center, then the methods to identify what it might contain, and lastly, possible conclusions along with implications of the findings. Several secondary sources, along with a python tool to analyze x-ray readings were used to identify the true nature of what lies in the center of the galaxy, whether it be a void due to the existence of dark energy or a black hole. Using this roughly 4-part examination, as a result of this study, a plausible definition of the galactic center was formulated, keeping in mind the rather wild theories, data and different ideas proposed by researchers. This paper aims to dissect the theory of a galactic center and identify its nature to help understand what it shows about galaxies and our universe.

**Keywords :** milky way, galaxy, dark energy, stars

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