



Contribution ID: 11

Type: **not specified**

One hundred years of studies of Rotation Curves of Spiral Galaxies

Friday 12 May 2023 09:20 (20 minutes)

The standard analysis of the rotation curves of spiral galaxies has led to the proposal of a dark matter component to explain their observed flat behavior. However, alternative models have been proposed to explain this tendency. In this study, we present a comprehensive analysis of the rotation curves in spiral galaxies using various physical theories. Our analysis takes into account recent observations, including the rotation curve of the Milky Way derived from Gaia Data Release 3 (DR3) data. Our objective is to gain a better understanding of the physical processes that govern the velocity behavior in spiral galaxies and to explore alternative explanations for the observed flatness of the rotation curves. Our findings will contribute to ongoing discussions surrounding the nature of dark matter and the dynamics of spiral galaxies.

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