

Executive Summary

- What is this contribution about?
In this work we look at the Andromeda excess in gamma rays focusing on comparing a millisecond pulsar (MSP) and annihilating dark matter scenario.
- Why is it relevant / interesting?
It is not clear yet, whether this excess is simply due to background mismodeling and if not, whether the MSP scenario is preferred over the dark matter one, as is the case with the similar excess from the Milky Way galactic center.
- What have we done?
By constructing stellar density maps to trace a population of MSPs in the bulge of Andromeda and using modern inpainting techniques to construct our background models we could test the MSP hypothesis and obtain its systematic uncertainties.
- What is the result?
Additional emission from annihilating dark matter is unwarranted when accounting for astrophysical emission of an unresolved population of MSPs or from gas and dust and background uncertainties are dominated by statistical errors rather than systematics.