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Aalbers, J. <j.aalbers@rug.nl>
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Author(s)

Student number	Family name	First name	Email address
S4711025	De Cesare	Lorenzo	l.de.cesare@student.rug.nl

Degree programme

Degree programme	Thesis type
Physics	Bachelor's Thesis

Supervisor(s) at UG

Family name	First name, prefix	Email address
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Aalbers J.
Dimastrogiovanni E.

Feringa Building, Cosmic Frontier j.aalbers@rug.nl
Feringa Building, Cosmic Frontier e.dimastrogiovanni@rug.nl

Original title

The influence of Galactic morphology on Dark matter detecting neural networks

Abstract of thesis

Determining the distribution dark matter structures, allows for the cosmological model of our universe to be refined, testing the widely accepted Λ cold dark matter model. Specifically, studying the distribution of small dark matter 'clumps', also known as sub-halos, in strongly gravitationally lensed systems seems to be an incredibly promising marker. Recent studies on this topic have focused on combining simulated lensed images with neural networks, in order to test the potential of the network in inferring the sub-halo mass distribution in these strongly lensed system. One of the most recent such studies is that by Wagner-Cerena et al [1], the study focuses on the development of the neural network and simulation methods. In this thesis, the dependence of this neural network on galaxy morphology is tested, in order to verify the reliability of the neural network. Through testing of the network performance with various morphological markers, it is established that galaxy morphology does not have any effect on the neural network developed by Wagner-Cerena et al [1].

Number of pages 36
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