

HECA Seminar

(High Energy, Cosmology and Astro-particle physics)

[HECA web-page](#)

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Pasteura 5, room B2.38 (Faculty of Physics)

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Testing the dark matter paradigm, or how to falsify CDM and its alternatives?

Abstract

While the Earth-base laboratories keep trying very hard to elucidate on the nature of the elusive dark matter particles the other very promising avenue to test and/or falsify potential dark matter candidates resides in astrophysical observations. In this context our own Galaxy - the Milky Way - with its unique set of satellites shows potential to serve as a extraterrestrial laboratory for dark matter. The very physical nature of dark matter particles and especially the differences between the main candidate, the neutralino of Cold Dark Matter (CDM), and its currently strongest competitor, the sterile neutrino of Warm Dark Matter candidate, may lead to significant differences in the properties of dwarf galaxies. Such objects are dominated (by mass) by their host DM haloes and therefore provide an unique view on the physical properties of DM. I shall discuss our recent efforts to use the state-of-the-art galaxy formation hydrodynamical simulation scheme of the EAGLE project as well as high-resolution Copernicus Complexio N-body simulations to study the galaxy formation of Milky Way like systems in CDM and WDM scenarios. Our results render new insights on potential ways to use astronomical observations for falsifying the CDM paradigm and testing its competitors.

Best regards,

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