



Nous avons le plaisir d'annoncer que le 4 juillet dernier Francesca Calore, chercheuse au LAPTh, a brillamment obtenu son habilitation à diriger des recherches.

Nous la félicitons!

Lors de sa soutenance elle a présenté :

The Galactic centre excess: A journey from dark matter to high-energy astrophysics

A journey from dark matter to high-energy astrophysics is not only the story of the excess of high-energy gamma-ray photons discovered towards the centre of the Galaxy by the Large Area Telescope (LAT) aboard the Fermi satellite, i.e. the so-called Galactic centre excess (GCE), but it also describes the path I followed in my scientific activity touching upon several disciplines.

The GCE is one among the most representative examples of yet-unknown excess emissions that lack an explanation within our standard framework and, thus, may point towards new sources and/or new emission mechanisms. Since 2009, several, independent, analyses of Fermi-LAT data detected this excess emission over the standard astrophysical background with more than

10 sigma significance at GeV energies.

In this manuscript, I will review the evidence and characterisation of the GCE, and I will present possible interpretations and the current debate on its nature. I will then focus on how we can test the GCE nature with current and future telescopes in radio, X rays and with gravitational waves, showing what are the prospects for discovering a yet-undetected population of compact objects in the Galactic bulge. I will also discuss how we can corner the dark matter interpretation with a multi-messenger approach.

Finally, I will conclude with an overview and projection of my future activities in this field.