



Contribution ID: 131

Type: **not specified**

## Dark correlations

*Tuesday, 12 September 2023 10:10 (20 minutes)*

In this talk I will focus on a promising novel line of research for dark matter indirect detection, called the cross-correlation technique. This novel technique aims to correlate two distinctive features of DM: on one side, an electromagnetic signal, which is a manifestation of the particle nature of DM and, on the other side, a gravitational tracer of the DM distribution in the Universe. A positive signal in this cross-correlation would indicate that the cause of the gravitational anomalies –which we call DM - indeed consists of exotic physics. One of the main advantages in principle is the ability to disentangle the astrophysical background from a potential dark matter signal by exploiting the different redshift distribution. Complementary information can be derived by considering different types of signals (photons, neutrinos, etc) and different gravitational tracers (21cm line of neutral hydrogen, galaxy catalogs, galaxy clusters, weak lensing, etc). In this talk, I will revise the current status of this line of research and the prospects for the future. In particular, I will explore a recent idea to use cosmic voids as a new tracer.

**Primary author:** PINETTI, Elena (Fermilab)

**Presenter:** PINETTI, Elena (Fermilab)

**Session Classification:** Plenary

**Track Classification:** Indirect DM searches