



Contribution ID: 23

Type: Poster

## Study of the properties of dark matter through the fermionic dispersion relations in a thermal medium at finite temperature

By not knowing the nature of the particles that make up dark matter, it is inferred that it acts forming a plasma or “dark thermal medium” that fills the space (intergalactic region), interacting to a greater or lesser degree with particles of ordinary matter (standard model particles) that are immersed in it.

In the work I'm developing, I analyze the properties of the SM fermions that can be modified by this interaction and, assuming that the DM acts in a similar way to a plasma at finite temperature and density, it is proposed a model for the dark sector composed by an  $SU(N_D)$  gauge theory, and considering that the effects of the dark medium must disappear at very large momenta, this theory is used to study the changes in the SM fermionic dispersion relations.

The developments carried out are used as a reference to analyze the dispersion of neutrinos coming from very distant sources that in principle are altered by the effects generated by the presence of the hypothetical dark matter particles.

**Authors:** TAMAYO PLAZAS, Daniel (Universidad Nacional de Colombia); Dr QUIMBAY HERRERA, Carlos (Universidad Nacional de Colombia)

**Presenter:** TAMAYO PLAZAS, Daniel (Universidad Nacional de Colombia)