

# Seminario

Departamento de Física Teórica

## *“Axion dark matter direct detection: Present and Future”*

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**Abstract:**

Axions are hypothetical particles introduced to solve the strong CP problem of the Standard Model. In addition axions can resolve the dark matter mystery. In this talk I will first discuss the interesting axion mass ranges which current and future direct detection experiments are targeting. I will then focus on two different detection techniques for dark matter axions. First I will discuss open axion haloscopes, such as dish antennas and dielectric haloscopes. We developed two calculation techniques to compute the fields in open axion haloscopes explicitly in 3D. These 3D techniques are needed for a reliable sensitivity estimate. I show how one can use our methods to calculate axion velocity effects and the influence of several experimental imperfections. The second part of my talk deals with axions that are realized in condensed matter systems. I will first outline an idea how one can detect them. Finally I discuss how axions, that are realized in condensed matter systems, can be used to detect dark matter axions.

**Fecha:** Lunes 18 de noviembre de 2019

**Hora:** 12:10

**Lugar:** Seminario de Física Atómica, Molecular y Nuclear