DESY

Particle and Astroparticle Physics Colloquium

An overview on axion physics.

Tuesday, 14 May 2019, DESY Auditorium, 16:45 h

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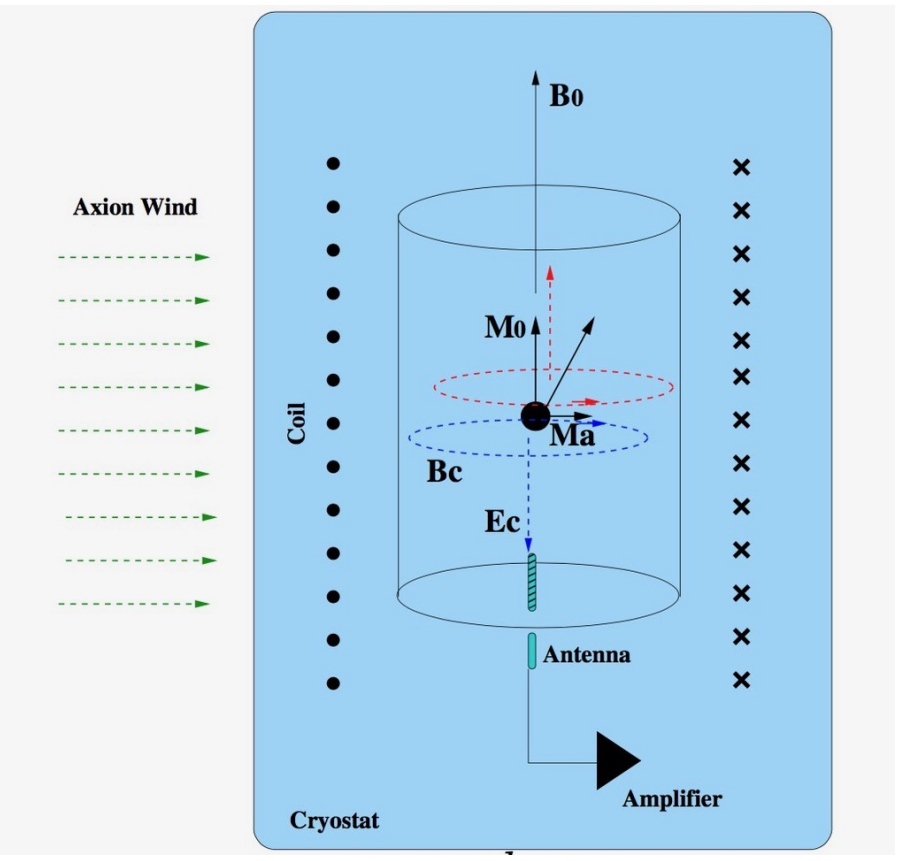
The axion came into play in the late seventies in an attempt to solve the strong CP problem, i.e. the absence of CP violation in the strong interaction. It is a pseudo-scalar boson whose mass and couplings to standard model particles are inversely proportional to fA, an energy scale related to the spontaneous breaking of a newly introduced symmetry (the so called Peccei and Quinn symmetry). Several axion models have been proposed, with the common feature of low mass and very weak interactions, making this particle an excellent Dark Matter candidate. Axions, and the related Axion Like Particles (ALPS), have been searched for in laboratory experiments since their proposal: a variety of uncommon techniques have been employed and new ones are also appearing in the literature with incredible frequency. In this seminar, after discussing the axion properties, I will illustrate the main lines of experimental research for these elusive particles. Thus featuring apparatuses like Dark Matter Haloscopes, Solar Axion Helioscopes, Regeneration experiments and very sensitive magnetic polarimeters.



- **Coffee, tea and cookies will be served at 16:30h**
- **After the colloquium there is a chance for private discussions with the speaker over drinks and pretzels**