EPFL PHYSICS COLLOQUIUM

Fundamental Physics with Quantum Sensors

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Monday

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16:15

Room CM 1

APERO after the colloquium

The search for new physical laws and particles has largely been driven by the expectation that the new physics lies at high energies with reasonably strong interactions with the standard model. However, the existence of dark matter and dark energy as well as the potential new physics that could be discovered using gravitational waves suggests that there is a strong case to search for phenomena that do not interact much with the standard model. The discovery of such phenomena requires precision sensing. The remarkable advances that have occurred in the field of quantum metrology in the past three decades has made it possible to deploy a wide variety of quantum sensors to detect such ultra-weakly coupled physics. In this talk, I will discuss a variety of new experimental methods that can be used to detect gravitational waves in the 1 Hz frequency band between LIGO and LISA, probe a wide variety of dark matter candidates as well as potentially probing the physics of dark energy in the laboratory.

School of Basic Sciences

Organized by the Institute of Physics, EPFL

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