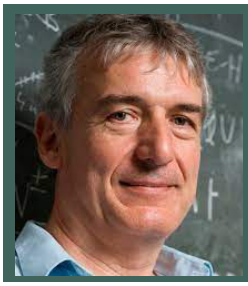
INTERNATIONAL SOLVAY INSTITUTES BRUSSELS

SOLVAY COLLOQUIUM



Prof. Pierre Sikivie

University of Florida, USA

Axion Dark Matter

Axions have a double motivation: they solve the `strong CP problem' of the Standard Model of elementary particles and they are a candidate for the dark matter of the Universe. Dark matter axions can be detected on Earth by converting them to photons in an electromagnetic cavity permeated by a strong magnetic field. A signal in such a detector, called an axion haloscope, would immediately reveal the velocity spectrum of dark matter axions on Earth in great detail. This prospect motivated the study of the special properties that axions have in large scale structure formation. It is shown that cold dark matter axions thermalize through their gravitational self-interactions, and form a Bose-Einstein condensate. As a result, axion dark matter behaves differently from the other proposed forms of dark matter. The differences are observable.

Tuesday 2 April 2024 at 4:00 P.M.

COFFEE AND TEA WILL BE SERVED AT 3:45 P.M IN FRONT OF THE SOLVAY ROOM

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