

The geometric origins of quantum instability

Jordi Gaset
CUNEF

Theories with unbounded energy have been disregarded in theoretical physics because their canonical quantization does not lead to a physically sound theory. They are called, in an unprecise manner, unstable. Recently proposed theories, especially in modified gravity, have been found to present instabilities for unexpected reasons. The detection and avoidance of instabilities has become a major obstruction to surpassing the standard models of particles and cosmology. In this talk we will show how the foundations of this problem can be traced back to the Pais-Uhlenbeck oscillator, and why the tools and language of convex analysis and KAM theory may be adequate to face the problem.