

# Cosmology and Quantum Physics: An understandable approach

**Date** 16:00 - 17:30, May 21 (Friday)

**Place** Room 9551, Building 9 (Online: TBD)

**Speaker** Prof. Emilio Elizalde

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## Abstract

I will discuss the discovery of the universe expansion and the proof of the island universe conjecture. Then I will move to the issue of the acceleration of the universe expansion. What is dark energy? Most probably, modifications of General Relativity need be introduced, but the possibility that it could be the result of a sort of Casimir effect at the cosmological level is not discarded, yet. One of the main technical problems in tackling down this issue is the regularization procedure and corresponding renormalization. Beautiful but non-trivial mathematics, involving the zeta function of pseudodifferential operators, are key in this respect. All these concepts will be explained at a very basic level.

## Biography

Prof. Emilio Elizalde is the founding leader of the "Theoretical Physics and Cosmology" group of the CSIC Institute for Space Science (ICE-CSIC and IEEC), in Bellaterra (Barcelona), a group highly recognized internationally. He is an Honorary Professor of two universities, visiting scholar at MIT and other high-level institutions several times, got two "Invitational Fellowships of the Japan Government for Excellent Researchers", and four "Distinctions of Merit" from the National Higher Research Council of Spain. A member of the European Science Foundation "College of Expert Reviewers", and also of the prestigious Barcelona Graduate School of Mathematics (BGSMath). Presently Vice-President of the Alexander-von-Humboldt Association of Spain.