Mathematics and Cosmology: on the Universe acceleration and the zeta function as a regularization tool

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Thursday, April 5, 2012
007 Kemeny Hall, 4:00 pm
(Tea 3:30 pm 300 Kemeny Hall)

Abstract

The knowledge of the Universe as a whole, its origin, size and shape, its evolution and future, has always intrigued the human mind. Galileo wrote: "Nature's great book is written in mathematical language." In the talk some explicit examples to confirm this statement will be presented. Main issue will be the nowadays hot question: What drives the acceleration of the Universe expansion? Dark energy, of course, but what is it? Beautiful mathematics, involving the zeta function of pseudodifferential operators, are key in answering those questions, crucial to understand (or, better, describe, mathematically modellize) the Universe we live in.

This talk should be accessible to undergraduate students