

Munich Center for Mathematical Philosophy

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Title

The development of the complex concept of inertia in the 17th century: Galileo, Descartes, Huygens and Newton

Abstract:

In this talk I will explain my recent research on the concept of inertia in the 17th century. In the next months a book of which Prof. Brunello Lotti and I are the authors will be published. The book is entitled: *Cosmology in the Early Modern Age: a Web of Ideas*. We do not restrict to expound cosmology, but we also focus on the physics behind the cosmological conceptions of seven scientists: Copernicus, Kepler, Galileo, Descartes, Huygens, Newton and Leibniz. In this context the notion of inertia played a fundamental role. The four authors who developed the most advanced notion of inertial motions were Galileo, Descartes, Huygens and Newton. In my talk I will compare their ideas on inertia showing the difficulties to grasp a precise concept of inertial motion. This question is connected, at least starting from Huygens and Newton, with the problem of identifying an inertial reference frame. The efforts carried out by Newton through his idea of absolute space is tied to the identification of an inertial reference frame to which all the other ones might be referred. As a matter of fact, in classical physics, it is difficult to solve this problem, as the discussions at the end of the 19 century-beginning of the 20th century testify. My talk will be divided into three parts: in the first one, the ideas of Galileo, Descartes, Huygens and Newton will be explained; in the second one I will discuss some interpretations of such ideas and propose my point of view; in the third one, a brief exposition of the train of thoughts typical of the late 19th century will be outlined.