TOMÁŠ R. ZEITHAMER

Department of Mathematics, Faculty of Informatics and Statistics, University of Economics, Czech Republic

METHODOLOGY OF THEORETICAL PHYSICS IN ECONOMICS: JERK DYNAMICS

Abstract:

This paper is part of research examining the systematic application of methods used in theoretical physics in economics. One aspect of this research is the comparison of linear and non-linear analytical structures of physics with analytical structures of economics. Methodological approaches of theoretical physics are used to derive the first step for constructing a principle of correspondence between economic variables and kinematic variables of non-relativistic mechanics: the path corresponds to the instantaneous commodity price; the jerk in mechanics corresponds to the price jerk. Assuming that the market value of the commodity is fully determined exclusively by the value of the instantaneous commodity price, the price jerk equation acquires the form that corresponds to the non-relativistic equation for jerk in mechanics, following from Newton´s second law of motion. In this paper price jounce and price crackle are defined.

The paper also focuses on factual research in bibliographic and biographical databases showing that representatives of the Czech School of Economics took a leading role in the methodological use of applied and theoretical physics in the basic economic research, especially in the second half of the twentieth century.

Keywords:

Differential equation, instantaneous commodity price, motion equation, correspondence principle, price jerk, price jounce, price crackle

JEL Classification: A12, C65