

Univerzita Karlova v Praze
Matematicko-fyzikální fakulta

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Jarníkovskou přednášku

Ill-Posed Problems in Probability

kterou přednese

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(katedra pravděpodobnosti
a matematické statistiky MFF UK)

**ve středu dne 1. října 2014
ve 14.00 hod.**

v posluchárně V. Jarníka (M1),
děkanát MFF UK, 2. patro
Ke Karlovu 3, Praha 2

Abstract: Ill-posed problems are usually understood as those problems in which small changes in the assumptions can lead to arbitrarily large changes in the conclusions. Such results are not very useful for practical applications where the presumptions usually hold only approximately. Often, the ill-posedness of certain practical problems is due to the lack of their precise mathematical formulation. Consequently, we can deal with such problems by replacing a given ill-posed problem with another, well-posed problem, which in some sense is "close" to the original one. Our goal is to show that ill-posed problems are not just a mere curiosity in the contemporary theory of mathematical statistics and probability. On the contrary, such problems are quite common, and majority of classical results fall into this class. Our objective is to identify problems of this type, and re-formulate them more correctly. Thus, we propose alternative (more precise in the above sense) versions of numerous classical theorems in the theory of probability and mathematical statistics. In addition, we shall consider some non-standard problems from this point of view. We consider such examples as reconstruction of a measure by its Radon transform, which is of great use in computer tomography. This problem appears to be ill-posed in case of point reconstruction, but it may be reformulated to be well-posed while using weak distance. Corresponding results may be reformulated in the form more applicable in medicine.

Lev Klebanov was born in Leningrad (now St. Petersburg), Russia. He finished Leningrad State University, Department of Mathematic and Mechanics in 1970. He obtained his PhD ("Candidate of Science") in Probability and Statistics at Steklov Mathematical Institute (Leningrad Branch) in 1973 and the "Doctor of Science" (Dr. Sci.) in Probability and Statistics at Leningrad State University. He worked at Leningrad Civil Engineering Institute, at Laboratory of Mathematical Geology, Institute of Precambrian Geology and Geochronology Russian Academy of Sciences, Russia, at Department of Biostatistics and Computational Biology, University of Rochester, USA, and also was visiting professor at many Universities in Russia, USA, Germany, Georgia, Lithuania, and other places. He published 9 monographs and more than 200 scientific papers.