On the 3rd of June, 2010, our friend and colleague Vidmantas Kastytis Bentkus suddenly and very unexpectedly passed away. As written in the medical conclusion, his heart stopped beating. . . . Lithuania’s science had lost one of the most gifted mathematicians.

In 1967, Vidmantas graduated from secondary school in Šilutė and entered Vilnius University (VU), Department of Mathematics and Mechanics (now Department of Mathematics and Informatics). After three years of studies at VU, together with some other students, Vidmantas was sent to continue studies at Moscow State University (MSU) which in the 1960s was among the best universities in the world in the area of physical sciences. At this time, in Lithuania, the school of probability theory was gaining strength, but the research in other branches of mathematics was at a rather low level. Therefore the strongest students were sent from VU to the best universities of the Soviet Union (Moscow, Leningrad, now St. Petersburg, Kiev) to study topology, differential equations, and functional analysis. Vidmantas had chosen functional analysis. Studying both at VU and MSU, Vidmantas demonstrated his talent in and devotion to mathematics. In 1973, he graduated from MSU with the so-called red diploma (corresponds to magna cum laude). Despite the high competition, at the same year, Vidmantas passed the entrance exams for graduate studies at MSU and started research under the supervision of professor O.G. Smolyanov. In 1976, he finished his graduate studies and in 1977 defended his PhD thesis (at that time, it was called the candidate of sciences dissertation), where he investigated problems of differentiation of measures and infinite-dimensional differential equations. Vidmantas proved a theorem on invertibility of infinite-dimensional elliptic operator and established a representation of the fundamental solution of infinite-dimensional elliptic differential equations by means of countably additive measures.
After returning to Lithuania in 1977, Vidmantas started to work as a junior researcher at the Institute of Mathematics and Informatics, which remained his main workplace. For several years, he had a supplementary professor’s position at VU, where he preferred to work individually with strong students. This activity was especially successful during the last five years. In 1986 he defended his second doctor of sciences dissertation (the equivalent of habilitation nowadays) and in 2004 became head of the Department of Probability Theory and Statistics, which he inherited from the late V. Statulevičius.

After spending some years in Vilnius, Vidmantas changed his research interests very decisively. At that time in Vilnius, there was the actively working seminar “Probability in infinite-dimensional spaces.” Vidmantas gave several talks on his own research and found that he liked probability in Banach spaces best. As one might say, it was love from at first sight....

After his first paper on the rates of convergence in the CLT in Banach space in 1981, there was only one period in 2003–2004 when Vidmantas returned to functional analysis. The appearance of two papers [26, 28] was promising, but very soon his interest in operator theory diminished, and during the last ten years, he was completely absorbed with inequalities for sums of random variables that we will speak about later. Thus, it is possible to say that, at the end of the 1980s, probability theory in Lithuania, with Vidmantas joining this area, had gained very much, but at the same time functional analysis had lost even more.

The first Vidmantas’ paper on probability limit theorems [1] establishes an estimate of order $O(n^{−1/8})$ for the rate of convergence in the central limit theorem in Banach spaces for a class of nonsmooth functionals. The novelty of this paper is in the application of differentiability of measures in directions from certain subspaces to the estimation of the accuracy of approximation in the central limit theorem in Banach spaces. This approach was further developed in the subsequent Vidmantas’ papers [2, 3, 4, 5, 6, 8, 9], where mainly the uniform distance over a class of sets (usually, with nonsmooth boundary) was considered. In [7], estimates of convergence rates in CLT in Banach spaces via the Prokhorov metric and the bounded Lipschitz metric where obtained. These results are in general not improvable.

Vidmantas showed a great deal of interest in questions concerning optimality of errors in the Gaussian approximation of convolutions. He published three papers devoted to these questions [11, 12]. In Banach spaces (if the third-order moments of the summands are finite and certain natural restrictions hold), bounds on the rate of convergence in the central limit theorem were known to be of order $O(n^{−1/6})$. In [12], Vidmantas proved that, in general, the order $O(n^{−1/6})$ cannot be improved. Similar lower bounds have been shown for the rate of convergence of moments.

The next two papers to be mentioned are devoted to large (moderate) deviations. In [13], Vidmantas investigated the tail probabilities of sums of independent identically distributed Hilbert-space-valued random elements, proving that the classical moderate deviation results in the so-called Linnik zone $O(n^{1/6})$. To this end, he adopted Lindeberg’s method with induction and iteration arguments, thus avoiding any use of Fourier transforms. These ideas were generalized in [15].

An important period in Vidmantas scientific career was the years spent in Bielefeld. In 1991, he was granted the Alexander von Humboldt Fellowship. Delighted with the active scientific life at Bielefeld University, he worked there from 1993 till 2001 as a long-term research scientist. His long-lasting collaboration with Friedrich Götze and communication with other scientists coming for shorter or longer visits to Bielefeld was very fruitful. The main objects of his studies were optimal error bounds for approximations in the central limit theorem in Hilbert spaces and related approximation problems in nonparametric statistics. Starting with the seminal results of Esseen, Kolmogorov, Linnik, and others, these questions had been intensively investigated by probabilists of Leningrad, Moscow, Novosibirsk, and Vilnius. Previous results in the 1980s showed that the error of approximation in the CLT for balls around zero in $L^p$-spaces, $p \geq 2$, was of order $O(n^{−1+p})$, where $1/2 \geq \epsilon > 0$ could be arbitrarily small, depending on the covariance operator of the underlying distribution of summands. Already in 1945, Esseen noted that the rate of order $O(n^{−1})$ in Euclidean spaces would amount to solving classical open questions about optimal remainders in lattice point counting in analytic number theory for ellipsoids raised by Hardy and Landau in the 1920s. Techniques from probability theory introduced and developed in [21, 22] led to a new perspective for the underlying problems in harmonic analysis, thus answering these questions and related conjectures by Davenport and Lewis (1970) about the distribution of values of irrational quadratic forms for dimensions greater than or equal to 9. These results (partially) extended the results of G. Margulis and his coworkers on the distribution of values of indefinite quadratic forms on lattices.