BORIS FEIGIN

This issue is dedicated to the 60-th birthday of Borya Feigin, a great mathematician, dear friend and teacher of many of us.

Borya's influence on modern mathematics and mathematical physics is really unbelievable. One of the main subjects of his research is the representation theory of the Virasoro algebra, which became a cornerstone of modern conformal field theory and string theory. Borya's pioneering works coauthored with Dmitry Fuchs led to an avalanche of publications in mathematics and mathematical physics all around the world. He also constructed and studied many examples of modular functors coming from coinvariants of Virasoro and affine Lie (super)algebras. Borya's works on cohomology and representation theory of current algebras formed a mathematical basis of the theory of WZW models in Conformal Field theory. The variety of applications of these results is very wide and includes the following subjects. First, they led to rich generalizations of classical combinatorial identities of Euler, Gauss and Jacobi, as well as more recent ones by Rogers–Ramanujan, Gordon and Macdonald. Second, they uncovered the representation-theoretic meaning of exact solutions and conservation laws of nonlinear equations of mathematical physics and their quantization. Finally, Borya's results on the Drinfeld–Sokolov reduction and the center of affine Kac–Moody algebras at the critical level coauthored with E. Frenkel led to a uniform description of W-algebras and to a great breakthrough in the realization of the Geometric Langlands program. The ideas of the pioneering work of Feigin and Tsygan on additive K-theory together with A. Connes' work on cyclic cohomology formed a basis of noncommutative geometry and gave a new approach to the local Riemann–Roch theorem. The definition of shuffle algebras (or Feigin–Odesski elliptic algebras) gave rise, on the one hand, to Bethe ansatz in many new classes of quantum integrable systems and, on the other hand, to a great progress in the understanding of instanton moduli spaces from the viewpoint of geometric representation theory. The latter led to a mathematical interpretation and generalization of the famous AGT conjecture which relates 4-dimensional gauge theory with 2-dimensional conformal field theory. Borya's deep and informal understanding of both quantum physics and homological algebra allows him to connect physicists and mathematicians and to translate the ideas from physics to mathematics and vice versa.

For many years, Borya has run an informal seminar for students — for more than 15 years at the Independent University of Moscow, and now at the new Math department of Vyshka (Higher School of Economics). This seminar is attended by many of the most talented students in Moscow. It does not follow any particular theme, and there is nothing very technical discussed there, but for many different fields of mathematics it gives the straightest way to the most nontrivial ideas and constructions. Maybe this is the main advantage of Borya's pedagogical gift — he can explain very deep things on very elementary examples. Borya's scientific generosity knows no bounds: the number of mathematical ideas he gave as an advice or just as a quick remark during a discussion exceeds any limit. Many of Borya's students became top-level mathematicians. His mathematical school is one of the strongest in Russia.

We wish Borya many happy returns of the day!

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