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Vadim Knizhnik [obituary]

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Vadim Knizhnik
20-2-1962 — 25-12-1987

This volume is devoted to the memory of Vadim Knizhnik. Dima was invited to give lectures at the Winter school, Srní, 1988. When he died two weeks before the beginning of this school, he was only twenty five.

Dima was a brillant physicist; in a very short time he succeeded to do amazingly much. The main field of his interests was conformal field theory and string theory. His first far-famed paper was written jointly with A. Zamolodchikov "Current algebra and Wess-Zumino model in two dimensions" (Nucl. Phys. B247 (1984), 83-103). In this work a theory of correlation functions of gauge fields on the plane is developed. It is one of first physical papers that used the full strength of representation theory of Kac-Moody algebras.

The other direction of his investigations was the extension of the conformal field theory to arbitrary Riemann surfaces. In the remarkable paper (jointly with A. Belavin) "Algebraic geometry and the geometry of quantum strings" (Phys. Lett. B, 168 (1986), 201-206) the statistical sum of free theory on a Riemann surface of arbitrary genus is calculated. This paper became a starting point for a number of important subsequent investigations, both physical and mathematical, devoted, in particular,

to generalizations of the Riemann-Roch theorem. To the same direction belongs his work "Analytic fields on Riemann surfaces I, II, (Phys. Lett. 180B (1986), 247-254 (1986); Commun. Math. Phys. 112 (1987), 567-590).

Apart from the above mentioned Dima wrote a number of remarkable papers. Recently a joint paper with A. Polyakov and A. Zamolodchikov is submitted to press in which the quantum theory of 2D gravitational field is developed.

Dima was one of the very few scientists who mastered equally easily both phisical and mathematical ideas. His work has contributed very much not only in physics but also in mathematics. Many people felt the great influence of his bright personality. The contact with him was very important for us.

B. Feigin
V. Schechtman

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