

Mathematical Foundation of Computer Science Laboratory



Lothar M. Schmitt
Professor



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Associate Professor

The scope of activities of Mathematics and Physics Group spans all aspects of research and education in the fields of mathematical sciences. Our current researches in the field of mathematics are devoted to various subjects and problems arising in both pure and applied mathematics: non-associative algebras, neural networks, unimodality problems, algebraic combinatorics, spherical functions, homotopy theory, and arithmetic theory.

In the fields of physics, theoretical research is performed in many-body theories, nuclear physics, quantum gravity and quantum mechanics of constrain system. There has been also a project to develop educational textbooks and software for mechanics, electromagnetism and quantum mechanics. The research areas assigned to each co-researcher are as follows:

Division of Computer Science

Prof. H. Sagawa	studies the physics of the many-body system of including atomic nuclei, microclusters and quantum information theory.
Prof. A. Fujitsu	studies the numerical superstring and quantum gravity.
Prof. M. Honma	researches the microscopic structures and dynamics of the nuclei by the algebraic methods and geometrical models performing the quantitative analysis by the large-scale numeric calculations.
Prof. K. Shimizu	advances the traditional quantum theory and creates the geometrical theory of quantum gravity.
Prof. M. Yamagami	studies the physics of atomic nuclei under the extreme condition based on the density functional theory.
Prof. N. Kamiya	studies the theory of non-associative algebras and a structure theory of algebras from triple systems.
Prof. T. Watanabe	generalizes the unimodality problems of 1-dimensional infinitely divisible distributions to multi-dimensional cases in the use of analytical methods.
Prof. K. Asai	researches combinatorial identities for generalized Young tableaux, and also, several generating functions arising from algebraic combinatorics.
Prof. T. Maeda	studies arithmetic of elliptic curves and modular forms and their applications.
Prof. S. Watanabe	studies geometrical interpretations of generating functions for spherical functions on homogeneous spaces.
Prof. H. Kihara	studies homotopy theory and its applications to various areas of mathematics.
Prof. T. Tsuchiya	studies the stochastic differential equations and their applications.

Ph.D and Others Theses

[lothar-01:2012] Tabata. Optimisation of Rocket Shape in regard to Air Resistance., BS, 2012.

[lothar-02:2012] Nitta. Optimisation of Chess Playing Programs., MS, 2012.

[lothar-03:2012] Katayama. Intelligent Document Design in Education, MS, 2012.