PhD

Multidimensional Complex Analysis

Key Information

Duration:
4 years (this period can be shorter depending on the availability of a PhD thesis)

Language:
English

Entry Requirements:
Master's degree (or equivalent) in Mathematics, Physics, or Computer Science (transcript of records), an adequate level of English proficiency (certificate or another document). Desired qualifications: good knowledge of mathematical analysis.

Tuition fees (2015/2016):
€ 1 850 (the cost does not include accommodation and living expenses).

Accommodation:
on-campus accommodation is available.
Costs (2015/2016):
single ensuite room: € 45 per month,
twin ensuite room: € 30 per month.

Practicalities:
airport transfer, an invitation letter to apply for a Russian study visa and an optional survival course of Russian as a foreign language are provided by Siberian Federal University.

Further details:
SibFU's Graduate School
aspirantura@sfu-kras.ru,
tel.: +7 391 291-28-31

Overview

Research in multidimensional complex analysis at Siberian Federal University is about several topics. The overarching theme is the interaction between complex analysis and other areas of mathematics and physics. For example, methods and techniques of functional analysis are applied to the study of PDEs in domains of complex space. Algebraic geometry plays an important role in the study of distribution of complex algebraic and analytic sets and its applications in physics. Alternatively, analytic methods are used in the theory of algebraic and hypergeometric functions, in the description of the structure of discriminantal sets. Other examples include the study of multidimensional difference equations, analytic continuation of functions and sets.

Professor Ari Laptev (Imperial College London, KTH, Institut Mittag-Leffler) leads the university team to develop academic research and expertise at the laboratory of complex analysis and differential equations. The research project is supported by the Government of the Russian Federation.

Contacts

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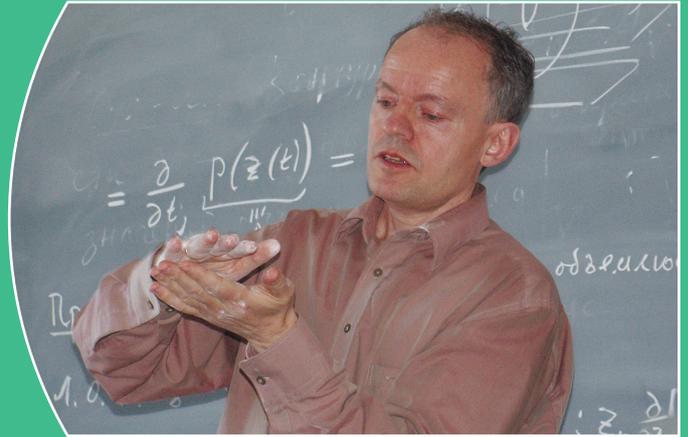
Programme Leader

Professor August TSIKH

Professor Tsikh worked at the universities of Stockholm, Bordeaux, Berlin, Calabria (Italy), Armidel (Australia), Max Planck Institute in Bonn, Institut Mittag-Leffler in Stockholm.
Research interests: complex analysis, algebraic geometry, tropical geometry, signal processing, mathematical physics (superstring theory, thermodynamics)

Selected publications

Sadykov, T., Tsikh, A. Hypergeometric and Algebraic Functions in Several Variables (in Russian). Nauka. 2014.

Tsikh, A. Multidimensional Residues and Their Applications. AMS. 1992.

Forsberg, M., Passare, M., Tsikh, A. Laurent Determinants and Arrangements of Hyperplane Amoebas, Advances in Mathematics, 2000, Vol. 151, Iss. 1, 45-70.

Passare, M., Tsikh, A., Yger, A. Residue currents of the Bochner-Martinelli type, Publicacions Matematiques , 2000, Vol. 44, Num. 1 , 85-117.

Passare, M., Tsikh, A. Amoebas: their spines and their contours, Contemporary Mathematics 377, 2005, 275-288.

Passare, M., Sadykov, T., Tsikh, A. Singularities of hypergeometric functions in several variables, Compositio Mathematica, 2005, 141, 787-810.

Tsikh, A., Yger, A. Residue Currents, J. of Math. Sci., Vol. 120, 2004, Iss. 6, 1916-1971.

Passare, M., Tsikh, A. Algebraic equations and hypergeometric series. In 'The Legacy of Niels Henrik Abel', Springer, 2004, 653 - 672.

Mikhalkin, E., Tsikh, A. Singular starta of cuspidal type for classical discriminants, Math. Sb., 2015.

Passare, M., Pochekutov, D., Tsikh, A. Amoebas of complex hypersurfaces in statistical thermodynamics, Math. Phys., Analysis and Geometry 16 (1), 2013, 89 - 108.

Krasnoyarsk

Krasnoyarsk is the administrative capital of Krasnoyarsky kray, the second largest region in Russia. It is a big industrial and educational centre with a population of more than 1 million people. It is also an important junction of the Trans-Siberian Railway.

The city is located on the Yenisey River in the valley formed by the Eastern Sayan Mountains. Nature reserve Stolby has become the city's famous landmark.

Krasnoyarsk will host the XXIX Winter Universiade 2019.
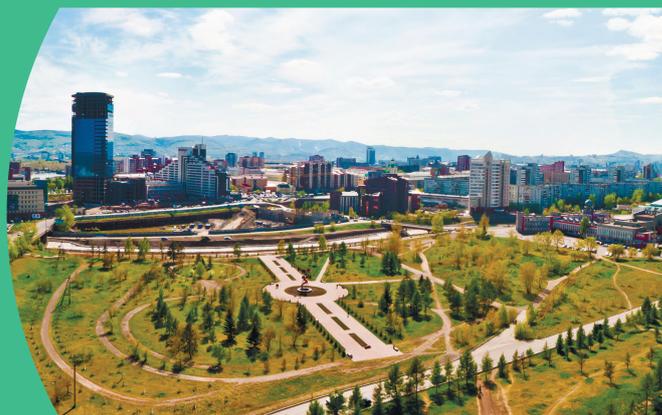
University

Siberian Federal University (SibFU) with over 35 000 students is one of the most vibrant Russian universities. Annually, more than 200 visiting professors – leading researchers from the UK, Germany, Spain and USA – visit SibFU to give lectures and attend conferences. Siberian Federal University receives funding from the RF Goverment that supports research projects developed under the supervision of prominent Russian scientists and international researchers. One of the research projects is carried out at the laboratory created in 2014 and supervised by Professor Ari Laptev (Imperial College London. KTH, Director of Institut Mittag-Leffler). The laboratory staff includes SibFU's professors August Tsikh, Alexander Kytmanov, and Sergey Tsarev.