

My Research Interests and Current Projects

Pavel Bleher

Indiana University-Purdue University Indianapolis, USA

MSRI Program “Universality and Integrability in Random Matrix Theory and Interacting Particle Systems”

October 15, 2021

My Research Interests

My research interests are

1. Mathematical Problems of Theory of Phase Transitions and Critical Phenomena in Statistical Physics.
2. Renormalization Group Theory.
3. Quantum Chaos.
4. Random Matrices: Universality, Phase Transitions and Critical Phenomena in Various Ensembles of Random Matrices.
5. Integrable Systems of Statistical Physics: 6-Vertex Model, Dimer Model, and others.

My collaborators are:

Yakov Sinai, Joel Lebowitz, Freeman Dyson, Peter Major, Elmundas Žalys, Mukadas Missarov, Misha Lyubich, Alexander Its, Xiaojun Di, Bernie Shiffman, Steve Zelditch, Arno Kuijlaars, Karl Liechty, Roland Roeder, Estelle Basor, Guilherme Silva, Alfredo Deaño, Maxim Yattselev, and others.

My Current Research Interests

My current research interests are

1. Phase Transitions and Critical Phenomena in Unitary Ensembles of Random Matrices with Complex Interaction Polynomials.
2. Renormalization Group and Thouless' Effect in Dyson's Hierarchical Models.
3. Evaluation of Correlation Functions in the Six Vertex Model and the Dimer Model of Statistical Physics.
4. Quantum Computing Algorithms for Quantum Spin Systems.

My Current Collaborators

My current collaborators are:

Roozbeh Gharakhloo, Ken McLaughlin, Ahmad Barhoumi, Alfredo Deaño, Maxim Yattselev, Misha Lyubich, Matt Dannenberg.

Thank you!

The End



Thank you!