

Yernur Baibolatov

PHYSICIST · PHYSICS TEACHER

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“Make the change that you want to see in the world.”

Education

KazNU (Al-Farabi Kazakh National University)

Almaty, Kazakhstan

DIPLOMA IN PHYSICS

Sep. 2001 - Jul. 2006

- Graduated as a Physicist and Physics Teacher
- Title of the Diploma: “**Encryption of digital images using Dynamical Chaos Generators**”
- Supervisor: *Prof. Zeinulla Zhanabaev, KazNU, Kazakhstan*

KazNU (Al-Farabi Kazakh National University)

Almaty, Kazakhstan

PH.D IN APPLIED PHYSICS

Sep. 2006 - May 2009

- Title of the Ph.D thesis: “**Synchronisation in Nonlinearly Coupled Oscillator Ensembles**”
- Domestic supervisor: *Prof. Zeinulla Zhanabaev, KazNU, Kazakhstan*
- Foreign supervisor: *Prof. Michael Rosenblum, Potsdam University, Germany*
- Foreign supervisor: *Prof. Arkady Pikovsky, Potsdam University, Germany*

Potsdam University

Potsdam, Germany

PH.D IN PLANETARY SCIENCES AND STATISTICAL PHYSICS

Feb. 2010 - PRESENT

- Title of the Ph.D thesis: “**Kinetic theory of Planetary Rings**”
- Scientific supervisor: *Prof. Frank Spahn, Potsdam University, Germany*

Scientific Experience

Laboratory of Nonlinear and Stochastic Processes, IETP

Almaty, Kazakhstan

UNDERGRADUATE RESEARCHER

Jul. 2003 - Jul. 2006

- Analyzed behaviour of dynamical chaos generators using MathCAD and MatLab.
- Worked on digital encryption mechanisms using dynamical chaos generators.
- Developed several software programs to encrypt and decrypt digital images using Assembler, C/C++ and Qt Libraries.

Laboratory of Nonlinear and Stochastic Processes, IETP

Almaty, Kazakhstan

GRADUATE RESEARCHER

Jul. 2006 - Dec. 2008

- Analyzed the behaviour of nonlinearly coupled phase oscillators and Kuramoto models.
- Developed numerical programs to analyze oscillator ensembles.

Nonlinear Dynamics and Statistical Physics Group, Potsdam University

Potsdam, Germany

GRADUATE RESEARCHER

Dec. 2008 - Sep. 2009

- Performed analytical and numerical analysis of nonlinearly coupled phase oscillator ensembles.
- Performed stability analysis and bifurcation analysis of nonlinear mean field differential equations.

Theoretical Physics, Planetology Group, Potsdam University

Potsdam, Germany

PH.D CANDIDATE

Feb. 2010 - PRESENT

- Worked on kinetic description of planetary rings.
- Developed Molecular Dynamics codes of adhesive granular gases using graphical processors (CUDA).
- Performed statistical description of aggregates formed by restitutive collisional dynamics.
- Analyzed energy fluxes in polydisperse granular gases.

Teaching Experience

KazNU (Al-Farabi Kazakh National University)

Almaty, Kazakhstan

LECTURER

Jul. 2006 - Dec. 2008

- Seminars and Laboratories: *Digital Signal Processing, Radioelectronics, Digital Electronics*
- Lectures and Seminars: *Introduction to LaTeX, C/C++ and MatLab*

Publications

- 2009 **Yernur Baibolatov, Michael Rosenblum, Zeinulla Zh. Zhanabaev, Meyramgul Kyzgarina and Arkady Pikovsky**, Periodically forced ensemble of nonlinearly coupled oscillators: From partial to full synchrony *Physical Review E* **80**, 046211
- 2010 **Yernur Baibolatov, Michael Rosenblum, Zeinulla Zh. Zhanabaev and Arkady Pikovsky**, Complex dynamics of an oscillator ensemble with uniformly distributed natural frequencies and global nonlinear coupling *Physical Review E* **82**, 016212
- 2012 **Yernur Baibolatov and Frank Spahn**, The role of adhesion for ensembles of mesoscopic particles *Granular Matter* **14**(2), p.197-202

Conferences and Workshops

Nonlinear Waves 2006

Nizhny Novgorod, Russia

POSTER PRESENTATION

Mar. 2006

- Stochastic Characteristics of Dynamical Chaos Generators

Dynamic Days

Göttingen, Germany

POSTER PRESENTATION

Aug. 2009

- Periodically forced ensembles of nonlinearly coupled phase oscillators

Planetary Rings Workshop

Hamburg, Germany

ORAL PRESENTATION

Mar. 2010

- Estimation of restitution coefficient in granular gases

Planetary Rings Workshop

Spreewald, Germany

ORAL PRESENTATION

Aug. 2011

- Force based molecular dynamics code as a tool to investigate adhesive granular gases

DPS (Division for Planetary Sciences)

Reno NV, USA

POSTER PRESENTATION

Nov. 2013

- The role of adhesion in the formation of aggregates in planetary rings

EPSC (European Planetary Science Congress)

Cascais, Portugal

POSTER PRESENTATION

Sep. 2014

- Energy fluxes in polydisperse granular gases

Granular Matter Workshop

Erlangen, Germany

PARTICIPANT

Mar. 2015

EPSC (European Planetary Science Congress)

Nantes, France

ORAL PRESENTATION

Sep. 2015

- Breakage of energy equipartition in polydisperse granular media

Personal Information

Place of birth

Taraz, Kazakhstan

DATE OF BIRTH

22 May 1984

- Marital Status: unmarried
- Language Skills: *Kazakh, Russian, English – fluent, German – B2 level*
- Programming Skills: Numerical programming in *C/C++, Python, MatLab*, using *OpenGL, Qt, CUDA* libraries
- Hobbies: *Football, Music, Literature, Candidate Master in Chess*