

CURRICULUM VITAE

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In 1991 I entered Dnepropetrovsk National University and in 1996 I graduated from the University, Department of Theoretical Physics with the Diploma with Honours. In 1997-1999 I worked as a researcher at the Department of Theoretical Physics. In 2000 I began a graduate program at the National University of Singapore (thesis advisor Edward Teo).

In July 2003 I gained a Doctor of Philosophy degree from Department of Physics, National University of Singapore. There I was also working as a Graduate Teaching Assistant in 2000-2003 yrs. From 2004/04 to 2006/04 I was holding a postdoctorate position at the Department of Gravity and Field Theory of Institute de Ciencias Nucleares (ICN), National Autonomous University of Mexico (UNAM). From 2007/07 to 2009/07 I was a postdoctorate at the Department of Physics, Stellenbosch University (South Africa). Starting from July 2009 I am a postdoctorate fellow at the National Institute of Theoretical Physics (NITheP) in Stellenbosch, South Africa.

Research Interests/Expertise:

- foundations and generalizations of quantum mechanics incl. non-Hermitian and non-commutative theories
- exact solutions of field theory and gravity (incl. black holes and p-branes) and their properties
- low-energy limit of the modern high-energy theory (string/Membrane theory)
- role of scalar field in Universe and its origin
- fundamental symmetries of Nature and their breakdown or violation
- testing extended theories of gravity (incl. PPN formalism) and fundamental physical principles
- dark matter problem (phenomenon of flat rotation curves in galaxies)
- cosmology, dark energy, origin of accelerated expansion of Universe

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Name in Ukrainian: КОСТЯНТИН Генріхович ЗЛОСЧАСТЬЄВ

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Education:

1991-1996 Diploma of Specialist in Physics (with Honours)
Dniepropetrovsk National University, Ukraine
2000-2003 PhD, Physics
National University of Singapore

Career/Experience:

2000-2003 Graduate Tutor, National University of Singapore
2004-2006 Postdoctorate, Instituto de Ciencias Nucleares
National Autonomous University of Mexico

Memberships, Honours and Fellowships:

1996 Diploma with Honours
Dniepropetrovsk National University, Ukraine
2002 President's Graduate Fellowship
National University of Singapore
2005 Simons Fellowship
Stony Brook University, New York
2009 NRF rating Y2
National Research Foundation, South Africa

Conferences/Seminars:

1998	WE-Heraeus-Seminar Mathematical problems in general relativity	PBH Bonn
1999	Conference 50 Years of the Nuclear Shell Model	Heidelberg
1999	WE-Heraeus-Seminar Gyros, Clocks, and Interferometers: Testing General Relativity in Space	PBH Bonn
2000	Conference Mathematics and Theoretical Physics: Challenges for the 21st Century	Singapore
2004	Two seminars Separability approach to Einstein gravity coupled to scalar and electromagnetic fields and its applications: Classification and sector structure, derivation of low-energy limit of string theories "without" Kaluza-Klein reduction, p-branes and exact scalar black hole solutions, BH-compatible cosmology	ICN-UNAM Mexico City
2006	Talk: Why do we live in a 4D world: Can cosmology, black holes and branes give an answer?	ICN-UNAM (Mexico City), IV Summer School on Math Physics (Belgrade)
2008	Talk: Non-Hermitian Quantum Mechanics and its applications for open quantum systems	MMET*08 (Odessa)
2009	Talk: Logarithmic nonlinearity in generally covariant quantum theories Talk: Formulation of non-commutative Quantum Mechanics in terms of Hilbert-Schmidt operators Seminar: What is hiding behind the non-commutative quantum mechanics?	4 th Gamow conference (Odessa) Ukrainian Mathematical congress (Kyiv) University of Kwazulu-Natal (Durban)

Publications:

23) Comment on "A limit on the variation of the speed of light arising from quantum gravity effects" aka "Testing Einstein's special relativity with Fermi's short hard gamma-ray burst GRB090510".

By K.G. Zloshchastiev.

[arXiv:0911.5550](https://arxiv.org/abs/0911.5550)

22) Logarithmic nonlinearity in generally covariant quantum theories: Origin of time and observational consequences.

By K.G. Zloshchastiev.

[arXiv:0906.4282](https://arxiv.org/abs/0906.4282)

21) Why do we live in a 4D world: Can cosmology, black holes and branes give an answer?

By K.G. Zloshchastiev.

Phys. Lett. **B638** (2006) 89-93 [hep-th/0601221]

20) Generic approach to dimensional reduction and selection principle for low-energy limit of M theory.

By K.G. Zloshchastiev.

[hep-th/0512128]

19) Co-existence of black holes and scalar field in cosmology.

By Konstantin G. Zloshchastiev.

Phys. Rev. Lett. **94** (2005) 121101 [hep-th/0408163]

18) Core structure and exactly solvable models in dilaton gravity coupled to Maxwell and anti-symmetric tensor fields.

By K.G. Zloshchastiev.

Phys. Lett. **B527** (2002) 215-225 [hep-th/0102127]

17) New approach to the classification and solving of Einstein-Maxwell dilaton gravity and its application for a particular set of exactly solvable models.

By Konstantin G. Zloshchastiev.

Phys. Rev. **D64** 084026, 2001. [hep-th/0101075]

16) Field to particle transition and nonminimal particles in sigma model, dilaton gravity and gauged supergravity.

By Konstantin G. Zloshchastiev.

Phys. Lett. **B519** 111-120, 2001.

15) Classical and quantum comparison of kink and bell solitons as zero-branes.

By K.G. Zloshchastiev.

Mod. Phys. Lett. **A15** 67-81, 2000.

14) Field-to-particle transition based on the zero-brane approach to quantization of multiscalar field theories and its application for Jackiw-Teitelboim gravity.

By Konstantin G. Zloshchastiev.

Phys. Rev. **D61** 125017, 2000. [hep-th/9912063]

- 13) Zero-brane approach to quantization of biscalar field theory about topological kink-bell solution.
By Konstantin G. Zloshchastiev.
Europhys. Lett. **49** 20-26, 2000. [hep-th/9912064]
- 12) Evolution of thin wall configurations of texture matter.
By Konstantin G. Zloshchastiev.
Gen. Rel. Grav. **31** 1821-1836, 1999. [gr-qc/0001002]
- 11) Zero-brane approach to study of particle - like solitons in classical and quantum Liouville fieldtheory.
By Konstantin G. Zloshchastiev.
J. Phys. **G25** 2177-2187, 1999. [hep-th/9911013]
- 10) Nonminimal particle - like solutions in cubic scalar field theory.
By Konstantin G. Zloshchastiev.
Phys. Lett. **B450** 397-404, 1999. [hep-th/9911012]
- 9) Classical and quantum evolution of nonisentropic hot singular layers in finite temperature general relativity: Letter.
By Konstantin G. Zloshchastiev.
Gen. Rel. Grav. **31** 571-577, 1999. [gr-qc/9911007]
- 8) Extended particle models based on hollow singular hypersurfaces in general relativity: Classical and quantum aspects of charged textures.
By Konstantin G. Zloshchastiev.
Int. J. Mod. Phys. **D8** 165-176, 1999. [gr-qc/9807012]
- 7) Plasma singular shells of Quark – gluon matter.
By Konstantin G. Zloshchastiev.
Int. J. Mod. Phys. **D8**:363-371, 1999. [gr-qc/9802021]
- 6) Barotropic thin shells with linear EOS as models of stars and circumstellar shells in general relativity.
By Konstantin G. Zloshchastiev.
Int. J. Mod. Phys. **D8**:549-555, 1999. [gr-qc/9802041]
- 5) Mass of perfect fluid black shells.
By Konstantin G. Zloshchastiev.
Mod. Phys. Lett. **A13**:1419, 1998. [gr-qc/9802042]
- 4) Acoustic phase lenses in superfluid He as models of composite space-times in general relativity: Classical and quantum properties with provision for spatial topology.
By Konstantin G. Zloshchastiev.
Acta Phys. Polon. **B30**:897-905, 1999. [gr-qc/9802060]
- 3) Radiation fluid singular hypersurfaces with de Sitter interior as models of charged extended particles in general relativity.
By Konstantin G. Zloshchastiev.
Class. Quant. Grav. **16**:1737-1744, 1999. [gr-qc/9707054]
- 2) Quantum kink model and SU(2) symmetry: Spin interpretation and T violation.
By Konstantin G. Zloshchastiev.

J. Phys. **A31**:6081-6085, 1998. [hep-th/9708018]

1) Monopole and electrically charged dust thin shells in general relativity: Classical and quantum comparison of hollow and atom - like configurations.

By Konstantin G. Zloshchastiev.

Phys. Rev. **D57**:4812-4820, 1998. [gr-qc/9708024]

Scientific Popular Publications:

3) The comeback of Aether? The “fifth element” and Lorentz invariance violation: history, modern view, relationship to Einstein’s theory. [in Russian]

By Konstantin G. Zloshchastiev.

Science and Life (Наука и Жизнь) № **1** (2007)

2) Black Holes: About singularity, information, entropy, cosmology and higher-dimensional grand unification theory in light of the modern theory of black holes. [in Russian]

By Konstantin G. Zloshchastiev.

Science and Life (Наука и Жизнь) № **12** (2005) 2-9

1) Black holes as fundamental objects of Universe: An analytical survey from Laplace to LHC. [in Russian]

By Konstantin G. Zloshchastiev.

Computerra (Компьютерра) **24 (596)** (28/06/2005) 48-53