Resume/CV
Valentin Kostov

Education

2010 Ph.D. in Physics, March 2010, The University of Chicago, Chicago IL
Dissertation in General Relativity and Cosmology:
"Average luminosity distance in inhomogeneous universes"

1996 Master of Science in Laser Physics, Sofia University, Bulgaria

Relevant achievements

2002 100% on GRE Physics - this test is mainly about college level physics

1991 Bronze Medal at the International Physics Olympiad in Havana, Cuba

1990 represented Bulgaria as one of five high school students at the International Physics Olympiad in Groningen, Netherlands

Courses prepared to teach

- College General Physics
- Engineering Physics
- Mechanics, Relativity, Waves, Optics, Heat, Electricity and Magnetism etc.
- higher level Physics up to Ph.D. level

- General Education Math including Discrete Math
- College Algebra
- Introductory Statistics, Probability, Combinatorics
- Pre-Calculus and Trigonometry
- Calculus I, II, and III
- Ordinary Differential Equations

Teaching Experience

2012-2017 **Adjunct Math/Statistics/Physics Instructor** City Colleges of Chicago, Chicago IL

- Teaching Math/Statistics/Physics to 60+ students; 12 contact hours/week; designing and delivering lectures, supervising laboratory exercises, writing exams and homework, grading, advising and managing diverse student population
- I computerize my courses at 100% so I am familiar with the typical online course management systems by Pearson (MyMathLab, MyStatLab, MasteringPhysics), WebAssign, Canvas, Blackboard, Aleks, D2L, Brightspace, McGrow Hill etc.

2010-present **Private Math/Physics/Statistics Tutor**

- High-school and college Math, Statistics, Physics, and beyond
- AP Physics, AP Calculus, AP Statistics
- standardized math and physics exams GMAT/GRE/ACT/SAT; MCAT

2004-2009 **Math and Physics Tutor**, University of Chicago, Chicago IL

- supporting calculus, general physics and more advanced classes like multivariable calculus, linear algebra, mathematical methods for physicists and electromagnetism
- helping college students of science and non-science majors and diverse backgrounds and ethnicities

2003-2007 **Graduate Teaching Assistant in Physics,** University of Chicago, IL

- classes were attended by physics, physics honors, pre-medical, and non-science students
- graded 20-40 students, led 4 hours/week lab demonstrating the experimental set up and providing technical help during the experiment
- led 1 hour/week discussion clarifying concepts and demonstrating practical problem solving

1991-2000 **Private Tutor in Math**, Sofia, Bulgaria

- explained math to several high school students as a private tutor

Research Experience

2006-2009 **Research Assistant**, University of Chicago, Chicago IL

- investigating applications of General Theory of Relativity to Cosmology
- discovered a new class of exact analytic solutions of Einstein Equations
- focused on gravitational lensing in highly relativistic inhomogeneous models

2001-2002 **Research Assistant**, Ohio State University, Columbus OH
High Energy Physics Group CDF (Collider Detector at Fermilab)

- developed C++ code for analysis of the collider detector data
- programmed new numerical procedures for finding a collision vertex more efficiently than the standard ones used

1998-2000 **Research Assistant**, Bulgarian Academy of Sciences, Sofia, Bulgaria
"Central Laboratory for Optical Storage and Processing of Information"

- developed numerically optical pattern recognition filters under MATLAB;
- created a new filter capable of recognizing translated and scaled versions of a pattern

Numerical/Programming Proficiency

C++ and any simpler language, object oriented or not; modest abilities for creating GUI; using extensively GRTensor, a package for General Realtivity symbolic calculations under Maple; writing Mathematica and Matlab programs for numerical calculations, in particular solutions of systems of nonlinear partial differential equations

Fellowships

2000-2001 Ohio State University Physics Department Fellowship

1991–1996 Foundation Eureka (Bulgaria) fellowship for excellent performance at the two International Physics Olympiads

Talks/Publications

- V. Kostov, "Average luminosity distance in inhomogeneous universes," Journal of Cosmology and Astroparticle Physics, 04 (**2010**) 001

- V. Kostov, “Scale and translation invariant minimum average correlation energy filter,” Applied Optics, 42, 181 (**2003**)

- V. Kostov, “Two Primary Vertex Finders,”
  talk given at Fermilab (August **2002**)

- V. Kostov, “Correlation Filter Providing Constant Central Correlation Value in the Case of Scaling And Rotation of the Reference Image,”
  Reports of the Bulgarian Academy of Sciences, v53, n4, 55 (**2000**)