

# LEONID A. KUNYANSKY

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## EXPERTISE

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- Theoretical analysis and numerical methods for Partial Differential Equations: electromagnetic theory, singular integral equations, wave scattering;
- Radon and spherical mean Radon transforms; inversion formulas and algorithms for photoacoustic, nuclear, and other types of tomography;
- Periodic PDEs and photonic crystals theory; high contrast asymptotics of photonics.

## RESEARCH EXPERIENCE

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Associate Professor	<b>University of Arizona, Tucson, AZ</b>	<b>2005 - present</b>
Assistant Professor		<b>2001 - 2005</b>
	Developed inversion formulas and algorithms for various tomography problems; designed new fast, high-order algorithms for surface scattering and photonic crystals theory	
Postdoctoral Scholar	<b>California Institute of Technology, Pasadena, CA</b>	<b>1998 - 2001</b>
	Developed new fast high-order algorithms for surface scattering problems in 3-D; studied scattering from singular obstacles with geometric singularities. Designed new tomography algorithms.	
Graduate Research Assistant	<b>Wichita State U., Wichita, KS.</b>	<b>1995 - 1998</b>
	Conducted analytical and numerical study of high-contrast asymptotic models in photonic crystals theory.	
Consultant, Quant. Analysis	<b>Koch Industries Inc., Wichita, KS.</b>	<b>1997 - 1998</b>
	Analysed and solved direct and inverse option pricing problems.	
Senior Research Scientist	<b>Kharkov Polytechnic University, Ukraine, USSR</b>	<b>1987 - 1995</b>
	Developed algorithms for the numerical inversion of the weighted Radon transform; solved non-linear inverse problems of plasma tomography. Studied numerically wind transfer of air pollutants.	

## TEACHING EXPERIENCE

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Associate Professor	<b>University of Arizona, Tucson, AZ</b>	<b>2005 - present</b>
Assistant Professor	<b>University of Arizona, Tucson, AZ</b>	<b>2001 - 2005</b>
Lecturer in Applied Mathematics	<b>California Institute of Technology, Pasadena, CA</b>	<b>2000 - 2001</b>
	Designed and taught a new course "Methods of tomography and computational electromagnetism".	
Graduate Teaching Assistant	<b>Wichita State U., Wichita, KS.</b>	<b>1995 - 1998</b>
	Taught introductory mathematical courses, assuming full responsibility of the class	
Mentor	<b>Kansas Outreach School in Mathematics.</b>	<b>1996 - 1998</b>

## OTHER EXPERIENCE

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Freelance programmer/ Graphics Designer	(Part time) Developed databases for the natural gas industry and worked as a computer graphics designer	<b>1993 - 1995</b>
Jr. Rsrch Scientist/ Programmer	<b>Institute of Gas Transport, Kharkov, Ukraine, USSR.</b>	<b>1985 - 1987</b>
	Developed data visualisation and simulation software for reoperators of gas compression plants.	
	<b>Military service, USSR.</b>	<b>1983 - 1985</b>

## EDUCATION

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Ph. D. in Appl. Math.	Wichita State U., KS, GPA 4.0/4.0, Advisor. Prof. P. Kuchment.	<b>1998</b>
Ph. D. in Engineering	Kharkov Polytechnic University, Ukraine, USSR.	<b>1993</b>

## AWARDS

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Dora Wallas Hodgson Outstanding Doctoral Student Award	<b>1998</b>
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