



## CURRICULUM VITAE

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### **Personal data**

Born: January 21, 1963, in Voronezh, USSR.

Citizenship: Russia

Married, one son

### **Education**

Doktor (equivalent of German Habilitation) on Experimental Instruments and Measurements, Moscow State University, 2009. Dissertation: "Thermal and excess noises in the experiments with test mass".

Kandidat (equivalent of Ph.D.) on Quantum Radiophysics, Moscow State University, 1991. Advisor: V.B.Braginsky. Dissertation: "The measurement of small long-term variations of dimensions and shape of the solid state materials".

M.Sc. (Physics), Moscow State University, 1986.

### **Professional experience:**

2012 – present: Professor, Physics Department, Moscow State University

2015 – present: leading research scientist Russian Quantum Center (part time)

1998 – 2012: Associate Professor, Physics Department, Moscow State University

1991 - 1998: Assistant professor, Physics Department, Moscow State University

1989 - 1991: Junior Research fellow, Physics Department, Moscow State University

1998-2017: involved in the joint research project with California Institute of Technology supported by NSF grants (PHY-0651036, PHY-9503642, PHY-980097, PHY-0098715, PHY-1305863).

### **Research interests and contributions:**

Development of new optical sensor configurations for the small displacement measurement, including Fabry-Perot and optical microsphere resonators. Gravitational wave detection experiments, quantum measurements. Investigation of mechanical fluctuations in the suspension prototypes of the gravitational wave detectors test mass. Design of microwave displacement transducers based on high quality sapphire resonators.

### **Professional skills:**

1. Experimental research:  
Development and implementation of complex, high precision mechanical, electrical and optical measurement systems. Near IR and visible light laser optic design and

tuning, analog and digital electronic circuit design, deep vacuum and cryogenic technique application, data acquisition and processing.

2. Teaching:

Regular lecture courses (Radiophysics, Solid state physics, Quantum oscillators), undergraduate and graduate students supervision.

3. Management:

Leading of small Ph.D. students group research, grant application and report coordination, grant finance and equipment management.

**Scientific achievements:**

Optical loss of pure silicon for future gravitational wave detector test masses was measured by means of whispering gallery mode microresonator. Quality factor  $10^9$  was achieved for the first time.

Mechanical noise on the complete fused silica prototype of the Advanced LIGO suspension has been investigated using state-of-art Fabry-Perot cavity based sensing technique. Absence of excess (non-thermal) noise has been approved At the level of  $0.01 kT$ .

Mechanical noise on the steel wires suspension for the LIGO interferometer has been investigated using optical sensing technique. Excess (non-thermal) noise has been discovered in the high stressed wires.

Low temperature microwave displacement transducers based on twin disks high quality sapphire resonators have been developed. Tuning coefficient  $1.7 \text{ MHz}/\mu\text{m}$  and highest quality factor ( $4 \times 10^8$ ) have been demonstrated.

**Current research topics:**

Investigation of mechanical fluctuation in the mirror coatings for Advanced gravitational wave antennas. Investigation of optical losses in crystalline silicon by means of whispering mode microresonators.

**Scientific supervisor:** 21 M.Sc. diploma students, 6 postgraduate students (4 got Ph.D. degree).

**Visiting scientist:**

University of Western Australia (Australia, Perth) – 1991, 1995, 2001, 2006 .

**Publications/ presentations:**

190 scientific papers in peer-reviewed journals, 17 presentations at international conferences, two textbooks.