

## **GIRISH S. AGARWAL, DISTINGUISHED PROFESSOR**

### **EDUCATION:**

B.S.	Physics	Gorakhpur University	1964
M.S.	Physics	Banaras Hindu University	1966
Ph.D.	Physics	University of Rochester	1969

### **TAMU FACULTY EMPLOYMENT:**

More than 5.0 years on this faculty; Initial Appointment: 2016

### **OTHER PROFESSIONAL EMPLOYMENT:**

INFOSYS Foundation Chair [visiting], Indian Institute of Science, Bangalore, India  
Noble Foundation Chair and Regents Professor, Oklahoma State University- 2004-2016  
Director and Distinguished Scientist- Physical Research Laboratory, Ahmedabad -1995-2006; Indian National Science Academy's Albert Einstein Centenary Research Professor  
Honorary Professorship (1995-2000) at Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore; Professor, University of Hyderabad; 1977- 1995  
Dean, School of Physics, University of Hyderabad, till November 1980;  
Visiting Positions at the University of Colorado, University of Manchester; University of Rochester, University of Ulm, University of Essen, University of Erlangen; Max-Planck-Institute für Quantenoptik, Garching; Technische Universität, Vienna.

### **SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:**

Fellow, The Royal Society, UK  
Fellow, American Physical Society  
Fellow, Optical Society of America  
Fellow, The World Academy of Sciences  
Fellow, The Indian National Science Academy  
Fellow, The Indian Academy of Science

### **HONORS AND AWARDS:**

C H Townes Medal, Optical Society of America (2022);  
Max-Born Award of the Optical Society of America (1988);  
Humboldt Research Award (1997), Germany;  
The World Academy of Sciences Prize in Physics (1994), Trieste, Italy;  
Eminent Faculty Award of The Oklahoma State University (2012);  
Shanti Swaroop Bhatnagar Award in Physical Sciences (1982), Govt. of India;  
Meghnad Saha Award in Theoretical Sciences (1987), University Grants Commission, New Delhi;  
Goyal Prize in Physics (1994);  
G.D. Birla Award for Scientific Research (1995);  
R.D. Birla Award of the Indian Physics Association (1996);  
M.N. Saha Birth Centenary Award (2001-2002) of the Indian Science Congress Association

### **INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST FIVE YEARS:**

#### **Invited Panels**

National Science Foundation

Department of Energy  
The Royal Society, UK

### **Committees**

Walther Award Committee, Optical Society of America  
Departmental and College committees, as assigned

### **Editorial Board**

Progress in Optics, Elsevier, Holland

### **PRINCIPAL PUBLICATIONS OF THE LAST FIVE YEARS:**

G S Agarwal and L. Davidovich; 2022 “Quantifying quantum-amplified metrology via Fisher information” *Phys Rev Research* 4, L012014.

Jayakrishnan M. P. Nair, Debsuvra Mukhopadhyay, and G. S. Agarwal; 2021 “Enhanced sensing of weak anharmonicities through coherences in dissipatively coupled anti-PT symmetric systems” *Phys Rev Lett* 126, 180401.

Alexander S. Solntsev, Girish S. Agarwal, and Yuri S. Kivshar; 2021 “Metasurfaces for Quantum Photonics” *Nat Ph* <https://doi.org/10.1038/s41566-021-00793-z> Vol 15, 327.

Fu Li, Tian Li, Marlan O. Scully, and Girish S. Agarwal, 2021 “Observation of Quantum Advantage with Squeezed Light for Absorption Measurement” *Phys. Rev. Applied* 15, 044030.

A. Classen, X. Liu, A. M. Zheltikov, and G. S. Agarwal, 2021 “Intensity correlations enable ultrahigh resolution plasmonic structured illumination microscopy without OTF gaps” *Opt Lett* 46,1554.

J. Wang, L. Davidovich, and G. S. Agarwal, 2020 “Quantum sensing of open systems: Estimation of damping constants and temperature” *Phys Rev Research* 2, 033389 (2020); DOI: 10.1103/PhysRevResearch.2.033389

G S Agarwal and A Classen; 2020 “Partial Coherence in modern optics -Emil Wolf's legacy in the 21st century” *Progress in Optics*, 65, 13; Editor T Visser, Elsevier, <https://doi.org/10.1016/bs.po.2019.11.008>

Zhedong Zhang, Girish S. Agarwal, and Marlan O. Scully; 2019 “Quantum fluctuations in Fröhlich condensate of molecular vibrations driven far from equilibrium” *Phys Rev Lett* 122, 158101.

Rahul Deshmukh, S. Age Biehs, Emaad Khwaja, Tal Galfsky, Girish S. Agarwal, Vinod M. Menon; 2018 “Long-Range Resonant Energy Transfer Using Optical Topological Transitions in Metamaterials” *ACS Photonics* 5, 2737.

Anton Classen, Joachim von Zanthier, Marlan O. Scully, Girish S. Agarwal, 2017 “Superresolution via Structured Illumination Quantum Correlation Microscopy (SIQCM)” *Optica* 4, 580.

M O Pleinert, J von Zanthier and G S Agarwal, 2017 “Hyperradiance from collective behavior of coherently driven atoms” *Optica* 4, 779.

### **PROFESSIONAL DEVELOPMENT ACTIVITIES IN THE LAST FIVE YEARS:**

Plenary and Invited talks at National and International Meetings; Summer schools

**GRANTS AND CONTRACTS (last 5 years):**

<b>Title:</b>	<b>Correlated superresolution microscopy with tailored deep-subwavelength illumination via nano and plasmonic structures</b>
Granting Agency:	WELCH FOUNDATION
Total/PI's Share:	\$195,000; <b>NO INDIRECT COSTS</b>
Duration:	June 2018- May 2021
Role:	PI
Co-PI(s):	none

<b>Title:</b>	<b>Correlated super-resolution and supersensitive total internal reflection fluorescence microscopy with structured classical and quantum illumination</b>
Granting Agency:	WELCH FOUNDATION
Total/PI's Share:	\$240,000; <b>NO INDIRECT COSTS</b>
Duration:	June 2021- May 2024
Role:	PI
Co-PI(s):	None

<b>Title:</b>	<b>Quantum approaches to biophysical systems, imaging and sensing</b>
Granting Agency:	Air Force Office of Scientific Research
Total/PI's Share:	\$500,000; my share 1/3rd
Duration:	March 2018- originally one year; got extended
Role:	CoPI
Co-PI(s):	YV Yakovlev and M O Scully

<b>Title:</b>	<b>Quantum coherence and quantum interactions in microtubules and surrounding environment</b>
Granting Agency:	Air Force Office of Scientific Research
Total/PI's Share:	\$1050,000; my share 1/3rd
Duration:	September 2020-August 2023;
Role:	COPI

Co-PI(s):	YV Yakovlev and M O Scully
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<b>Title:</b>	<b>Quantum coherence and quantum interactions in microtubules and surrounding environment</b>
Granting Agency:	Air Force Office of Scientific Research- <b>DURIP</b>
Total/PI's Share:	\$295,000 + our commitment \$150,000; shared laboratories
Duration:	September 2020-August 2021
Role:	COPI
Co-PI(s):	YV Yakovlev and M O Scully

**Secured funding from the Humboldt Foundation Germany for supporting a POSTDOC for two years** with the provision that the advisor would provide 1/3<sup>rd</sup> of support. Dr Classen joined in April- May 2019

**In addition, PostDocs and graduate students** from China and Germany who were primarily supported by their respective countries