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**ROBERT S. KNOX**

**Curriculum Vita** (detailed version at <https://www.pas.rochester.edu/~rsk/>)

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**Academic Degrees:**

B. S. (Engineering Physics) Lehigh University, 1953  
Ph. D. (Physics, Optics) University of Rochester, 1958

**Employment:**

1968 - 1997 Professor of Physics, University of Rochester  
1963 - 1968 Associate Professor of Physics, University of Rochester  
Summer 1963 Theoretical Physicist, Xerox Corporation  
1960 - 1963 Assistant Professor of Physics, University of Rochester  
Summer 1960 Resident Research Associate, Argonne National Laboratory  
1959 - 1960 Research Assistant Professor of Physics, University of Illinois  
1958 - 1959 Research Associate in Physics, University of Illinois  
1953 - 1958 Teaching and Research Assistant in Physics and Optics, University of Rochester  
Summers, Apprentice Assistant Design Engineer, Naval Ordnance Division,  
1952 - 1955 Eastman Kodak Company

**Appointments (all University of Rochester)**

1997 - Professor of Physics Emeritus  
1985 - 2016 Senior Scientist, Laboratory for Laser Energetics  
1997 - 2001 Faculty Senior Associate, Department of Physics and Astronomy  
1982 - 1986 Dean, University College of Liberal and Applied Studies  
1982 - 1987 Associate Dean for Special Programs, College of Arts and Science  
1969 - 1974 Chairman, Department of Physics and Astronomy

**Awards and Honors:**

1994 Co-winner, Prize in Biological Physics, American Physical Society  
1993 Royal Society Guest Research Fellow and UK Fulbright Scholar, Department of Biochemistry, Imperial College of Science, Technology and Medicine, London  
1987 Watkins Visiting Professor, The Wichita State University, Wichita, KS (one week)  
1979 Japan Society for the Promotion of Science Fellowship (short-term) at the Physics Department of Kyoto University, Kyoto, Japan (September - November)  
1978, 1989 Annual Award for Excellence in Teaching, Department of Physics and Astronomy, University of Rochester  
1967 - 1968 National Science Foundation Senior Postdoctoral Fellowship, at the University of Leiden Biophysical Laboratory  
1955 - 1956 National Science Foundation Predoctoral Fellowship, at the University of Rochester

### **Other Professional Activity:**

- 1990 - 1993 Member of Joint Publication Committee, Biophysical Journal  
1989 - 1994 Member and Chair (1989-1993), Physics Programs Policy Committee, American Institute of Physics  
1986 - 1989 Member of APS Committee on the Status of Women in Physics  
1985 - 1988 Member of APS Committee on Education  
1985 - 1988 Member of Council, APS, representing the Division of Biological Physics  
1984 - 2002 Member of the editorial board, Journal of Luminescence  
1984 - 1989 Associate Editor, Biophysical Journal  
1984 Co-organizer (with S. Doniach and L. Stryer), Workshop on Membrane Biophysics, Aspen Center for Physics, Aspen, CO  
1981 - 1982 Chairman, APS Division of Biological Physics  
1980 - 1981 Vice-Chairman, APS Division of Biological Physics  
1977 - 1980 Member at large, executive committee, APS Division of Biological Physics  
1973 - 1975 Chairman, New York State Section, APS  
1971 - 1977 Member of the executive committee, New York State Section, APS  
1971 - 1973 Vice chairman and program committee chairman, New York State Section, APS

### **Selected publications by field**

#### **Excitons – general**

- Robert S. Knox, *Theory of Excitons*, Academic Press, Inc., New York, 1963. Published as Supplement 5 of Solid State Physics (F. Seitz and D. Turnbull, editors)  
T. S. Rahman and R. S. Knox, *Theory of singlet-triplet exciton fusion*, Physica Status Solidi (b) **58**, 715-720 (1973)  
R. S. Knox and N. Inchauspé, *Exciton states in ionic crystals*, Phys. Rev **116**, 1093-1099 (1959)

#### **Chemical Physics – excitation transfer**

- V. M. Kenkre and R. S. Knox, *Generalized-master-equation theory of excitation transfer*, Phys. Rev. **B9**, 5279-5290 (1974)  
V. M. Kenkre and R. S. Knox, *Theory of fast and slow excitation transfer rates*, Phys. Rev. Lett. **33**, 803-806 (1974)  
Robert S. Knox and Demet Gülen, *Theory of polarized fluorescence from molecular pairs: Förster transfer at large electronic coupling*, Photochem. Photobiol. **57**, 40-43 (1993)  
R. S. Knox, *Theory of polarization quenching by excitation transfer*, Physica **39**, 361-386 (1968)  
Robert S. Knox and Herbert van Amerongen, *Refractive index dependence of the Förster resonance excitation transfer rate*, J. Phys. Chem. B **106**, 5289-5293 (2002)

#### **Biological physics**

- Thomas H. Foster, Richard S. Murant, Robert G. Bryant, Robert S. Knox, Scott L. Gibson, and Russell Hilf, *Oxygen consumption and diffusion effects in photodynamic therapy*, Radiation Res. **126**, 296-303 (1991) Reprinted in the SPIE Milestone Series, volume 82, Selected papers on Photodynamic Therapy, David Kessel, editor, SPIE Optical Engineering Press, Bellingham, WA (1993), pp. 511-518.  
Mamoru Mimuro, Tsunenori Nozawa, Naoto Tamai, Keizo Shimada, Iwao Yamazaki, Bruce P. Wittmershaus, Daniel C. Brune, Robert E. Blankenship, Su Lin, and Robert S. Knox, *Excitation energy flow in chlorosome antennas of green photosynthetic bacteria*, J. Phys. Chem. **93**, 7403-7509 (1989)  
R. S. Knox, *On the theory of trapping of excitation in the photosynthetic unit*, J. Theoret. Biology **21**, 244-259 (1968)  
Robert S. Knox, *Thermodynamics and the primary processes of photosynthesis*, Biophysical J. **9**, 1351-1362 (1969)

## General physics

- Mark F. Bocko, David H. Douglass, and Robert S. Knox, *Observation of frequency shifts of spectral lines due to source correlations*, Phys. Rev. Lett. **58**, 2649-2651 (1987)
- J. E. Robinson, F. Bassani, R. S. Knox, and J. R. Schrieffer, *Screening correction to the Slater exchange potential*, Phys. Rev. Lett. **9**, 215-217 (1962)

## Atomic and molecular physics

- Robert S. Knox, *Excited-state wave functions, excitation energies, and oscillator strengths for argon ( $3p^54s$ )*, Phys. Rev. **110**, 375-381 (1958)
- Albert Gold and Robert S. Knox, *Excited-state wave functions, excitation energies, and oscillator strengths for Ne ( $2p^53s$ )*, Phys. Rev. **113**, 834-839 (1959)
- John D. Dow and Robert S. Knox, *Excited-state wave functions, excitation energies, and oscillator strengths for krypton and xenon*, Phys. Rev. **152**, 50-56 (1966)
- Robert S. Knox and Bryan Q. Spring, *Dipole strengths in the chlorophylls*, Photochem. and Photobiol. **77**, 497-501 (2003)

## Condensed Matter Physics

- F. Bassani, R. S. Knox, and W. B. Fowler, *Band structure and electronic properties of AgCl and AgBr*, Phys. Rev. **137**, A1217-A1225 (1965)
- Robert S. Knox, *Configuration interaction in alkali halide phosphors*, Phys. Rev. **115**, 1095-1106 (1959). Reprinted in Selected papers on Phosphors, LEDs, and Scintillators: Application of Photo-, Cathodo-, Electro-, and Radioluminescence, edited by Marvin J. Weber (SPIE Optical Engineering Press, Bellingham, WA, 1998)
- R. S. Knox and F. Bassani, *Band structure of solid argon*, Phys. Rev. **124**, 652-657 (1961)
- Dwight C. Burnham, Frederick C. Brown, and Robert S. Knox, *Electron mobility and scattering processes in AgBr at low temperatures*, Phys. Rev. **119**, 1560-1570 (1960)
- S. D. Druger and R. S. Knox, *Theory of trapped hole centers in rare gas solids*, J. Chem. Phys. **50**, 3143-3153 (1969)

## Climate-related

- Robert S. Knox, *Physical aspects of the greenhouse effect and global warming*, Amer. J. Phys. **67**, 1227-1238 (1999)
- R. S. Knox, *Non-radiative energy flow in elementary climate models*, Phys. Lett. A **329**, 250-256 (2004)
- D. H. Douglass, V. Patel, and R. S. Knox, *Iceland as a heat island*, Geophys. Res. Lett. **32**, L03709 (4 p.) (2005)
- David H. Douglass and Robert S. Knox, *Climate forcing by the volcanic eruption of Mount Pinatubo*, Geophys. Res. Lett. **32**, L0571 (5 p.) (2005)
- D. H. Douglass, R. S. Knox, B. D. Pearson, and A. Clark, Jr., *Thermocline flux exchange during the Pinatubo event*, Geophys. Res. Lett. **33**, L19711 (2006)
- David H. Douglass and Robert S. Knox, *Ocean heat content and Earth's radiation imbalance*, Phys. Lett. A **373**, 3296-3300 (2009)
- R. S. Knox and D. H. Douglass, *Recent energy balance of Earth*, Intl. J. Geosciences **1**, 99-101 (2010)
- D. H. Douglass and R. S. Knox, *Ocean heat content and Earth's radiation imbalance. II. Relation to climate shifts*, Phys. Lett. A **376**, 1226-1229 (2012)
- D. H. Douglass and R. S. Knox, *The sun is the climate pacemaker. I. Equatorial Pacific Ocean temperatures*, Phys. Lett. A **379**, 823-829 (2015)
- D. H. Douglass and R. S. Knox, *The sun is the climate pacemaker. II. Global ocean temperatures*, Phys. Lett. A **379**, 830-834 (2015)
- David H. Douglass, Robert S. Knox, Scott Curtis, Benjamin S. Giese, and Sulagna Ray, *Historical Phase-locked States and El Niño Episodes*, Atmospheric and Climate Sciences **7**, 48-64 (2017)