



## Robert Wagoner

Professor of Physics, Emeritus

### CONTACT INFORMATION

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### Bio

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#### BIO

Robert V. Wagoner's scientific direction was established rather suddenly in 1960, when he attended a series of lectures on cosmology by the British astrophysicist Fred Hoyle. At the time, Wagoner was a mechanical engineering undergraduate at Cornell University, receiving his B.M.E. in 1961. Born and raised in Teaneck, New Jersey, his other major interest was golf, leading to a position on the Cornell team. He switched to physics while at Stanford University, receiving an M.S. in engineering science in 1962 and a Ph.D. in physics in 1965. He then worked as a postdoctoral fellow at Caltech, collaborating with William A. Fowler and Hoyle on the first complete calculation of the abundances of the elements produced in the primordial universe. After three years, he returned to Cornell as a faculty member in the astronomy department. Five years later, he returned to Stanford's physics department, where he is a professor of physics, emeritus and a member of the Kavli Institute for Particle Astrophysics and Cosmology.

#### ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Physics

#### HONORS AND AWARDS

- Visiting Fellow, Institute of Theoretical Astronomy, Cambridge University (1967, 1971)
- George Ellery Hale Distinguished Visiting Professor, University of Chicago (1978)
- Sherman Fairchild Distinguished Scholar, Caltech (1976)
- Fellowship, Guggenheim Foundation (1978)
- Fellowship, A.P. Sloan Foundation (1969)

#### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Fellow, American Physical Society (1965 - present)
- Member, American Astronomical Society (1966 - present)

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Probes (accretion disks, ...) of black holes, sources and detectors of gravitational radiation, theories of gravitation, anthropic cosmological principle.

### Publications

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#### PUBLICATIONS

- **Search for quasi-periodic oscillations in TESS light curves of bright Fermi Blazars** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*  
Tripathi, A., Smith, K., Wiita, P. J., Wagoner, R.  
2024; 528 (4): 6608-6618
- **Optical quasi-periodic oscillations in the <i>TESS</i> light curves of three blazars** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*  
Tripathi, A., Smith, K., Wiita, P. J., Wagoner, R.  
2023; 527 (3): 9132-9144
- **Evolution of a Mode of Oscillation within Turbulent Accretion Disks** *ASTROPHYSICAL JOURNAL*  
Wagoner, R. V., Tandon, C. R.  
2021; 920 (2)
- **Confrontation of Observation and Theory: High-frequency QPOs in X-Ray Binaries, Tidal Disruption Events, and Active Galactic Nuclei** *ASTROPHYSICAL JOURNAL*  
Smith, K., Tandon, C. R., Wagoner, R. V.  
2021; 906 (2)
- **10.3847/2515-5172/ac3d94** *Why have the observed high-frequency QPOs not been produced by (MHD) computer simulations of black hole accretion disks?*  
Wagoner, R. V., Tandon, C. R.  
2021
- **Order out of Randomness: Self-Organization Processes in Astrophysics** *SPACE SCIENCE REVIEWS*  
Aschwanden, M. J., Scholkmann, F., Bethune, W., Schmutz, W., Abramenko, V., Cheung, M. C. M., Muller, D., Benz, A., Chernov, G., Kritsuk, A. G., Scargle, J. D., Melatos, A., Wagoner, et al  
2018; 214 (2)
- **Evidence for an Optical Low-frequency Quasi-periodic Oscillation in the Kepler Light Curve of an Active Galaxy** *The Astrophysical Journal*  
Wagoner, R. V., Smith, K. L., Mushotzky, R. F., Boyd, P. T.  
2018; 860
- **DO MAGNETIC FIELDS DESTROY BLACK HOLE ACCRETION DISK g-MODES?** *ASTROPHYSICAL JOURNAL*  
Ortega-Rodriguez, M., Solis-Sanchez, H., Agustin Arguedas-Leiva, J., Wagoner, R. V., Levine, A.  
2015; 809 (1)
- **DISKOSEISMOLOGY AND QPOs CONFRONT BLACK HOLE SPIN** *ASTROPHYSICAL JOURNAL LETTERS*  
Wagoner, R. V.  
2012; 752 (2)
- **A subhorizon framework for probing the relationship between the cosmological matter distribution and metric perturbations** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*  
Amin, M. A., Wagoner, R. V., Blandford, R. D.  
2008; 390 (1): 131-142
- **Corotation resonance and diskoseismology modes of black hole accretion disks** *ASTROPHYSICAL JOURNAL*  
Silbergleit, A. S., Wagoner, R. V.  
2008; 680 (2): 1319-1325

- **Relativistic and Newtonian diskoseismology** *Conference on Jean-Pierre Lasota, X-Ray Binaries, Accretion Disks and Compact Stars*  
Wagoner, R. V.  
ELSEVIER SCI LTD.2008: 828–34
- **Normal modes of black hole accretion disks** *GEOPHYSICAL AND ASTROPHYSICAL FLUID DYNAMICS*  
Ortega-Rodriguez, M., Silbergleit, A. S., Wagoner, R. V.  
2008; 102 (1): 75-115
- **Diskoseismology** *International Conference on Helioseismology, Asteroseismology and MHD Connections (HELAS II)*  
Wagoner, R. V.  
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- **Global disk oscillation modes in cataclysmic variables and other newtonian accretors** *ASTROPHYSICAL JOURNAL*  
Ortega-Rodriguez, M., Wagoner, R. V.  
2007; 668 (2): 1158-1164
- **A timing signature of gravitational radiation from LMXB neutron stars** *Conference on X-Ray Timing 2003 - Rossi and Beyond*  
Wagoner, R. V.  
AMER INST PHYSICS.2004: 224–227
- **Astronomy - Heartbeats of a neutron star** *NATURE*  
Wagoner, R. V.  
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- **Conditions for steady gravitational radiation from accreting neutron stars** *ASTROPHYSICAL JOURNAL*  
Wagoner, R. V.  
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- **Relativistic diskoseismology. III. Low-frequency fundamental p-modes** *ASTROPHYSICAL JOURNAL*  
Ortega-Rodriguez, M., Silbergleit, A. S., Wagoner, R. V.  
2002; 567 (2): 1043-1056
- **"Stable" quasi-periodic oscillations and black hole properties from diskoseismology** *ASTROPHYSICAL JOURNAL*  
Wagoner, R. V., Silbergleit, A. S., Ortega-Rodriguez, M.  
2001; 559 (1): L25-L28
- **Relativistic diskoseismology. II. Analytical results for c-modes** *ASTROPHYSICAL JOURNAL*  
Silbergleit, A. S., Wagoner, R. V., Ortega-Rodriguez, M.  
2001; 548 (1): 335-347
- **Relativistic gravity and some astrophysical applications** *Summer School on Astroparticle Physics and Cosmology*  
Wagoner, R. V.  
INT CENTRE THEORETICAL PHYSICS.2001: 1-?
- **Gravitational radiation evolution of accreting neutron stars** *20th Texas Symposium on Relativistic Astrophysics*  
Wagoner, R. V., Hennawi, J. F., Liu, J. S.  
AMER INST PHYSICS.2001: 781–786
- **On the perturbations of viscous rotating Newtonian fluids (vol 537, pg 922, 2000)** *ASTROPHYSICAL JOURNAL*  
Ortega-Rodriguez, M., Wagoner, R. V.  
2000; 543 (2): 1060
- **On the perturbations of viscous rotating Newtonian fluids** *ASTROPHYSICAL JOURNAL*  
Ortega-Rodriguez, M., Wagoner, R. V.  
2000; 537 (2): 922-926
- **Direct analysis of spectra of the Type Ic supernova SN1994I** *ASTROPHYSICAL JOURNAL*  
Millard, J., Branch, D., Baron, E., Hatano, K., Fisher, A., Filippenko, A. V., Kirshner, R. P., Challis, P. M., Fransson, C., Panagia, N., Phillips, M. M., Sonneborn, G., Suntzeff, et al  
1999; 527 (2): 746-756

- **An analytic approximation for plane-parallel compton scattering near accretion disks** *ASTROPHYSICAL JOURNAL*  
Wagoner, R. V., Silbergleit, A. S.  
1999; 527 (1): 254-261
- **Relativistic diskoseismology** *Conference on Processes in Astrophysical Fluids on the Occasion of the 60th Birthday of Giora Shaviv*  
Wagoner, R. V.  
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- **Scalar-tensor cosmologies and their late time evolution** *PHYSICAL REVIEW D*  
Santiago, D. I., Kalligas, D., Wagoner, R. V.  
1998; 58 (12)
- **Nucleosynthesis constraints on scalar-tensor theories of gravity** *PHYSICAL REVIEW D*  
Santiago, D. I., Kalligas, D., Wagoner, R. V.  
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- **The 67 Hz feature in the black hole candidate GRS 1915+105 as a possible "diskoseismic" mode** *ASTROPHYSICAL JOURNAL*  
Nowak, M. A., Wagoner, R. V., Begelman, M. C., Lehr, D. E.  
1997; 477 (2): L91-L94
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Perez, C. A., Silbergleit, A. S., Wagoner, R. V., Lehr, D. E.  
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- **Relativistic diskoseismology** *IAU Colloquium 163 on Accretion Phenomena and Related Outflows*  
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- **SEMIANALYTIC CONTINUUM SPECTRA OF TYPE-II SUPERNOVAE** *ASTROPHYSICAL JOURNAL*  
Montes, M. J., Wagoner, R. V.  
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- **ACCRETION DISC TURBULENCE AND THE X-RAY POWER SPECTRA OF BLACK-HOLE HIGH STATES** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*  
Nowak, M. A., Wagoner, R. V.  
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- **A HUBBLE-SPACE-TELESCOPE ULTRAVIOLET-SPECTRUM OF SN 1993J** *ASTROPHYSICAL JOURNAL*  
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- **TURBULENT GENERATION OF TRAPPED OSCILLATIONS IN BLACK-HOLE ACCRETION DISKS** *ASTROPHYSICAL JOURNAL*  
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- **GREEN-FUNCTION FOR METRIC PERTURBATIONS DUE TO COSMOLOGICAL DENSITY-FLUCTUATIONS** *PHYSICAL REVIEW D*  
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- **SN-1992A - ULTRAVIOLET AND OPTICAL STUDIES BASED ON HST, IUE, AND CTIO OBSERVATIONS** *ASTROPHYSICAL JOURNAL*  
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1993; 415 (2): 589-615
- **DISKOSEISMOLOGY - SIGNATURE OF AGN AND STELLAR MASS BLACK-HOLE ACCRETION DISKS** *ANNALS OF THE NEW YORK ACADEMY OF SCIENCES*  
WAGONER, R., Nowak, M.  
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- **MILESTONES AND MISSED OPPORTUNITIES IN THE EARLY HISTORY OF PRIMORDIAL NUCLEOSYNTHESIS** *ANNALS OF THE NEW YORK ACADEMY OF SCIENCES*  
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- **COSMOLOGICAL DISTANCES FROM SUPERNOVA PHOTOSPHERES** *PHYSICS REPORTS-REVIEW SECTION OF PHYSICS LETTERS*  
Wagoner, R. V., Montes, M.  
1993; 227 (1-5): 205-221
- **MILESTONES AND MISSED OPPORTUNITIES IN THE EARLY HISTORY OF PRIMORDIAL NUCLEOSYNTHESIS** *16TH TEXAS SYMP ON RELATIVISTIC ASTROPHYSICS / 3RD INTERNATIONAL SYMP ON PARTICLES, STRINGS, AND COSMOLOGY*  
WAGONER, R.  
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- **DISKOSEISMOLOGY - SIGNATURE OF AGN AND STELLAR MASS BLACK-HOLE ACCRETION DISKS**  
WAGONER, R., NOWAK, M.  
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NEW YORK ACAD SCIENCES.1993: 721–25
- **DISKOSEISMOLOGY - PROBING ACCRETION DISKS NEAR BLACK HOLES AND NEUTRON STARS** *International Conference on Fluid Mechanics and Theoretical Physics, in Honor of Professor Pei-Yuan Chou's 90th Anniversary*  
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- **DISKOSEISMOLOGY - PROBING ACCRETION DISKS .2. G-MODES, GRAVITATIONAL-RADIATION REACTION, AND VISCOSITY** *ASTROPHYSICAL JOURNAL*  
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- **OBTAINING THE METRIC OF OUR UNIVERSE** *PHYSICAL REVIEW D*  
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Nowak, M., Wagoner, R. V.  
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- **DISKOSEISMOLOGY - PROBING ACCRETION DISKS .1. TRAPPED ADIABATIC OSCILLATIONS** *ASTROPHYSICAL JOURNAL*  
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- **TRAPPED OSCILLATIONS OF ACCRETION DISKS** *6TH ASTROPHYSICS MEETING OF THE INST ASTROPHYSICS PARIS / 129TH COLLOQUIUM OF THE INTERNATIONAL ASTRONOMICAL UNION : STRUCTURE AND EMISSION PROPERTIES OF ACCRETION DISKS*  
Nowak, M., Wagoner, R. V.  
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- **FROM THE EXPANSION OF SUPERNOVAE TO THE EXPANSION OF THE UNIVERSE**  
WAGONER, R. V.  
edited by NANOPOULOS, D. V.  
WORLD SCIENTIFIC PUBL CO PTE LTD.1991: 251–65
- **FROM THE EXPANSION OF SN-1987A TO THE EXPANSION OF THE UNIVERSE**  
WAGONER, R. V.  
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- **DETERMINING THE PROPERTIES OF ACCRETION-GAP NEUTRON-STARS** *ASTROPHYSICAL JOURNAL*  
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- **PULSAR EVOLUTION** *NATURE*  
Kluzniak, W., Lindblom, L., Michelson, P., Wagoner, R. V.  
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- **GRAVITATIONAL LENSING STATISTICS OF AMPLIFIED SUPERNOVAE** *ASTROPHYSICAL JOURNAL*  
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- **SPECTRAL FLUX FROM LOW-DENSITY PHOTOSPHERES - LOW-TEMPERATURE RESULTS** *ASTROPHYSICAL JOURNAL*  
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- **AMPLIFICATION AND POLARIZATION OF SUPERNOVAE BY GRAVITATIONAL LENSING** *ASTROPHYSICAL JOURNAL*  
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- **SPECTRAL FLUX FROM LOW-DENSITY PHOTOSPHERES - APPROXIMATE RESULTS** *ASTROPHYSICAL JOURNAL*  
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- **SPECTRAL FLUX FROM LOW-DENSITY PHOTOSPHERES - NUMERICAL RESULTS** *ASTROPHYSICAL JOURNAL*  
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- **EVOLUTION OF THE INNERMOST STABLE ORBITS AROUND ACCRETING NEUTRON STARS** *ASTROPHYSICAL JOURNAL*  
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- **PREDICTED CONTINUUM SPECTRA OF TYPE-II SUPERNOVAE - LTE RESULTS** *ASTROPHYSICAL JOURNAL*  
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1985; 289 (1): 198-202
- **GRAVITATIONAL-RADIATION FROM ACCRETING NEUTRON STARS** *ASTROPHYSICAL JOURNAL*  
Wagoner, R. V.  
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- **ELECTRICALLY NEUTRAL QUARKS - PRODUCTION OF FRACTIONALLY CHARGED HADRONS** *PHYSICAL REVIEW D*  
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- **EFFECTS OF SCATTERING ON CONTINUUM RADIATION FROM SUPER-NOVAE AND DETERMINATION OF THEIR DISTANCES** *ASTROPHYSICAL JOURNAL*  
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- **ASTROPHYSICAL BOUNDS ON VERY-LOW-MASS AXIONS** *PHYSICAL REVIEW D*  
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- **GRAVITATIONAL-RADIATION FROM SLOWLY ROTATING COLLAPSE - AN EXACT GREEN-FUNCTION** *ASTROPHYSICAL JOURNAL*  
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- **LOW-FREQUENCY GRAVITATIONAL RADIATION FROM COLLAPSING SYSTEMS** *PHYSICAL REVIEW D*  
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- **PRODUCTION OF FREE QUARKS IN THE EARLY UNIVERSE** *PHYSICAL REVIEW D*  
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- **TUNABLE FREE-MASS GRAVITATIONAL-WAVE DETECTOR** *PHYSICAL REVIEW D*  
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- **DETERMINING Q<sub>0</sub> FROM SUPERNOVAE** *ASTROPHYSICAL JOURNAL*  
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- **INTERPRETATION OF FAR INFRARED-EMISSION FROM INTERSTELLAR GRAINS** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*  
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