

Prof George Ellis



BIO

George Ellis, FRS, is Professor Emeritus of Applied Mathematics at the University of Cape Town. He obtained his PhD at the University of Cambridge, where he worked on general relativity theory and cosmology. He has been based at the University of Cape Town since 1974, but has been visiting Professor at Texas, Chicago, Hamburg, Boston, Edmonton, London, and Oxford, and for a while, was Professor of Cosmic Physics at the International School of Advanced Studies (SISSA), Trieste, Italy. In recent years he has been working on the philosophy of cosmology and the emergence of complexity, the nature of causation, and aspects of neuroscience.

In 1999 he was awarded the Star of South Africa Medal by President Nelson Mandela, and in 2004: the Templeton Prize. His books include *The Large Scale Structure of Space Time* written with Stephen Hawking, *The Moral Nature of the Universe: Cosmology, Theology, and Ethics* (with Nancy Murphy), *Downward Causation and the Neurobiology of Free Will* (Ed, with N Murphy and T O'Connor), *How Can Physics Underlie the Mind, and Beyond Evolutionary Psychology* (written with Mark Solms). View [Google Scholar page](#).

RESEARCH INTERESTS

- General relativity and cosmology
- Quantum foundations
- Complexity and emergence: how life and the mind/brain emerge from physics

DISCIPLINE

Astronomy/Astrophysics

TOP 10 PUBLICATIONS

[The large scale structure of space-time](#)
SW Hawking, GFR Ellis
Cambridge Univ Press

LIST OF PUBLICATIONS IN HARVARD STYLE FORMAT

[Dynamical systems in cosmology](#) J Wainwright, GFR Ellis Cambridge Univ Press

LINK TO PUBLICATIONS DOI/ARXIV

[Relativistic cosmology](#) GFR Ellis, R Maartens, MAH MacCallum Cambridge University Press

LINK TO PUBLICATION 3: DOI/ARXIV

[Covariant and gauge-invariant approach to cosmological density fluctuations](#) GFR Ellis, M Bruni *Physical Review D* 40 (6), 1804

LINK TO PUBLICATION 10: DOI/ARXIV

[How Can Physics Underlie the Mind](#) G Ellis *Top-Down Causation in the Human Context*. Berlin and Heidelberg: Springer-Verlag

LINK TO PUBLICATION 3: DOI/ARXIV COPY 6

The dynamical emergence of biology from physics: branching causation via biomolecules GFR Ellis, J Kopel *Frontiers in physiology* 9, 1966 <https://www.frontiersin.org/articles/10.3389/fphys.2018.01966/full>

LINK TO PUBLICATION 3: DOI/ARXIV COPY 5

Contextual wavefunction collapse: An integrated theory of quantum measurement B Drossel, G Ellis *New Journal of Physics* 20 (11), 113025 <https://iopscience.iop.org/article/10.1088/1367-2630/aaecec/pdf>

LINK TO PUBLICATION 3: DOI/ARXIV COPY 4

The dynamics of pressure-free matter in general relativity GFR Ellis *Journ Math Phys* 8, 1171-1194

LINK TO PUBLICATION 3: DOI/ARXIV COPY 3

Schwarzschild black hole lensing KS Virbhadra, GFR Ellis *Physical Review D* 62 (8), 084003

LINK TO PUBLICATION 3: DOI/ARXIV COPY 2

Cosmological models GFR Ellis, H Van Elst *Carg\{e} se lectures* 1998: Arxiv preprint gr-qc/9812046

LINK TO PUBLICATION 3: DOI/ARXIV COPY

Relativistic Cosmology General Relativity and Cosmology GFR Ellis *Proc. XLVII Enrico Fermi Summer School ed RK Sachs* (New York: Academic)

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