

International Max Planck Research School for Astronomy and Astrophysics at the Universities of Bonn and Cologne

Max-Planck-Institut für Radioastronomie, Auf dem Hügel 69, Bonn 53121, Germany

IMPRS for Astronomy and Astrophysics

Max-Planck-Institut für Radioastronomie

Auf dem Hügel 69, Bonn, DE

imprs@mpifr.de

Tel: +49 (0) 228 525 218

www.mpi.fr.de/imprs

Thursday, September 26, 2013

PRESS RELEASE

Subject Invitation to the public talk of **Professor Sir Roger Penrose** of the *University of Oxford*

Date/Time **November 21, 2013, at 18:30**

Venue **“Hörsaal I”** of the main building of the University of Bonn (Am Hof 1, 53113 Bonn)

It is a greatest honour of the *International Max Planck Research School (IMPRS) for Astronomy and Astrophysics at the Universities of Bonn and Cologne* operated by the *Max-Planck-Institut für Radioastronomie* to announce the public talk of **Professor Sir Roger Penrose** within the context of the *Max Planck Lecture Series*.

Talk Title:

Are we Seeing Signals from Before the Big Bang? Recent results from WMAP and Planck.

Talk Summary:

Conformal cyclic cosmology (CCC), initially proposed in 2005, takes what we currently regard as the entire history of the Universe, from its Big-Bang origin (but without any inflationary phase) to its final exponential expansion, to be but one aeon of a continual succession of such aeons. The big bang of each is taken to be a conformal continuation of the exponentially expanding remote future of the previous one via an infinite metric rescaling. A positive cosmological constant (dark energy) and some primordial scalar material (dark matter) are both essential to CCC's consistency. The 2nd law of thermodynamics is CCC's driving concept, and its consistency depends upon information loss in the quantum evaporation of black holes.

Supermassive black hole encounters in the aeon previous to ours would have important observational implications for CCC, detectable within the cosmic microwave background. Recent evidence for this in both the WMAP and Planck satellite data will be presented.

Speaker Biographical Note:

Sir Roger Penrose, Professor of Mathematics at the *University of Oxford* is a globally recognised mathematical physicist with outstanding contributions to mathematics, physics and neuroscience. He was awarded his Ph.D. degree for his work in algebra and geometry from the *University of Cambridge* in 1958. Ever since, he has been appointed in academic positions at *King's College, Princeton University, Syracuse University, Polish Academy of Sciences, University of Oxford* and other. He has published numerous articles on mathematical topology, matrix theory as well as cosmology, quantum gravity and general relativity. Among his most recognisable contributions are the *Penrose Mechanism*, which predicts the energy extraction from rotating black holes and his work on the connection of human consciousness to the fundamental laws of physics. His work has received several distinctions among which: the *Wolf Foundation Prize for Physics*

(1988), the *Dirac Medal* (1989) and the *Copley Medal* (2008). Aside of his research activities Professor Penrose has published a number of books, such as: *The Emperor's New Mind* (1989), *The nature of space and time* (1996), *The Road to Reality* (2004) and many more.

Contact

Professor Dr. J. Anton Zensus

Speaker of the IMPRS
Director at the Max-Planck-Institut für Radioastronomie

Dr. Emmanouil Angelakis

IMPRS Coordinator

Frau Simone Pott

IMPRS Assistant
imprs@mpifr.de, tel+49 (0) 228 525 218