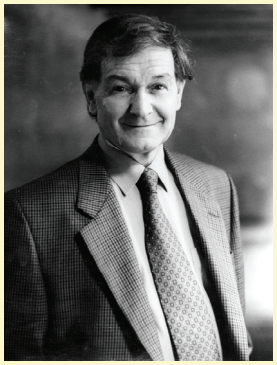
**2011 MICHALIK LECTURE**



Prof. Sir Roger Penrose has made many contributions to the fields of Mathematics and Physics. He proved that singularities (such as black holes) could be formed from the gravitational collapse of immense, dying stars and invented spin networks which later came to form the geometry of spacetime in loop quantum gravity. Prof. Penrose is also well known for his 1974 discovery of Penrose tilings, which are formed from two tiles that can only tile the plane non-periodically, and are the first tilings to exhibit fivefold rotational symmetry. He is the recipient of many awards and honors, including a Royal Medal from the Royal Society and a Wolf Prize, which he shares with Stephen Hawking. Prof. Penrose's book "The Road to Reality" gives a comprehensive guide to the laws of physics. His latest book is "Cycles of Time."

**4:00 P.M.**
**Monday,**
**January 24, 2011**

Ballroom B,
University Club
at the University of Pittsburgh

Free and Open
to the Public

School of Arts & Sciences

The University of Pittsburgh
Department of Mathematics

Presents

The Edmund R. Michalik
Distinguished Lecture in the
Mathematical Sciences

# Sir Roger Penrose

Emeritus Rouse Ball Professor of Mathematics
at the Mathematical Institute, University of Oxford

## *Can We See Through the Big Bang, into Another World?*

Abstract: The proposal of Conformal Cyclic Cosmology (abbreviated CCC) asserts that what we presently regard as the entire history of our universe, from its Big-Bang origin to its indefinitely expanding future, is but one aeon in an unending succession of similar such aeons, where the infinite future of each matches to the big bang of the next via an infinite change of scale. CCC predicts that supermassive black-hole encounters in the aeon prior to ours would be observable to us as families of concentric rings of unusual temperature structure in the cosmic microwave background. Recent analysis of data from the WMAP satellite has been argued to provide confirmation of this signal, allowing us to "see through" our Big Bang to such events occurring in the aeon prior to ours. The status of this controversial proposal will be discussed.

**Reception Immediately**
**Following the Lecture**

This public lecture is part of an annual series in honor of Professor Edmund R. Michalik, established through a gift from the Michalik family.

For further information, email: **math@pitt.edu**
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or visit **http://www.mathematics.pitt.edu**