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

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**Sir Roger Penrose**, Professor of Mathematics at the University of Oxford is a globally recognized mathematical physicist with outstanding contributions to mathematics, physics and neuroscience. Among his most recognizable 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.

In his lecture he will focus on the conformal cyclic cosmology (CCC), initially proposed in 2005, that 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.