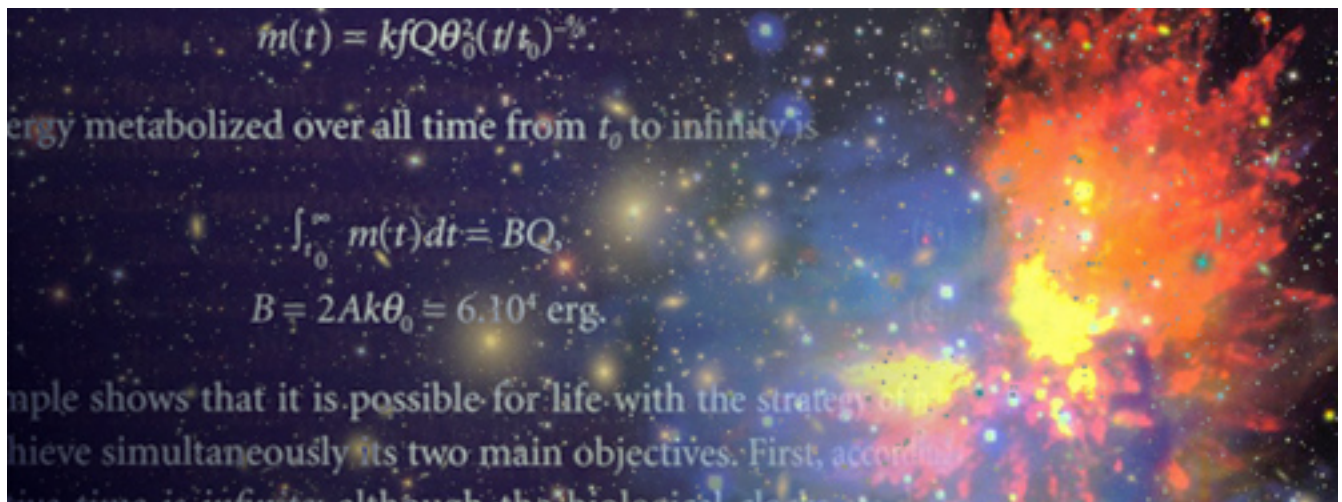# The Future Universe: From a Cosmic Perspective

Working Group

1. Physics of the universe: scenarios for the long-range future

(A) Towards asymptopia: evolution of cosmic structure, death of stars, decay of atoms, formation and evaporation of black holes, behaviour near cosmological singularities, etc. What would an eternal cosmos be like at each era between the present and the final 'omega point'?

(B) Possibility of sudden apocalypse: could our present space (if vacuum is metastable) be converted catastrophically into a new kind of space, governed by different physical laws?

2. Mathematics

Nature of complexity. Limits to the amount of information storage in the cosmos and how it depends on the cosmological model. Simple models for emergent complexity: cellular automata, 'artificial life' etc.

3. Biology

How large is the contingent element in evolution? Scenarios and constraints for alternative evolution on Earth-like planets, for future evolution on Earth, for other life-forms in quite different habitats, and for the spread of life (or automata created by life) through the Galaxy and beyond? SETI-related issues.

4. Philosophy/theology

Drawing the threads together and the relevance of these ideas to our human perspective.

A Symposium sponsored by the John Templeton Foundation

Organizers: John Barrow, George V. Coyne, George Ellis, Michael Heller, Martin J. Rees