

## Preface

Subrahmanyan Chandrasekhar was born on 19th October 1910. The year 2010 therefore marked the centenary of his birth. Chandrasekhar was a physicist and applied mathematician who made significant contributions to the structure and evolution of stars, stellar dynamics, radiative transfer, hydrodynamic and hydromagnetic stabilities, the mathematical theory of black holes in general relativity, and the theory of colliding gravitational waves. He also explained the geometry of Newton's Principia in terms of ordinary calculus. In a seminal paper, Chandrasekhar derived the limit named after him, which determines the maximum mass of a white dwarf star. A star with mass greater than the Chandrasekhar limit will collapse into a neutron star or a black hole. Chandrasekhar was awarded the Nobel Prize in Physics, jointly with W A Fowler, for his work on the structure and evolution of stars. A unifying feature of Chandrasekhar's research was his deep admiration and respect for differential equations and their various applications.

The Annual Congress of the South African Mathematical Society (SAMS) was held at the University of Pretoria during 2–5 November 2010. The Council of SAMS agreed to dedicate a special session of the Congress to research related to the work of Chandrasekhar. The special session was organized jointly by the Astrophysics and Cosmology Research Unit, University of KwaZulu-Natal, and the Centre for Differential Equations, Continuum Mechanics and Applications, University of the Witwatersrand. This was the only special session of the SAMS conference, which is an indication of the high value that has been placed on the contributions of Chandrasekhar. The special session was entitled *Chandrasekhar centenary: Recent developments in applied differential equations* and attracted considerable attention. Several research papers with this focus were presented, a selection of which appear in this special issue. All papers were strictly refereed. We are grateful to the speakers, authors and referees for their efforts and contributions to the special session and the Proceedings. It is hoped that the deliberations at this meeting will positively affect the course of future research in areas of research that were of interest to Chandrasekhar. We thank the Editorial Board of *Pramana* in supporting our proposal for a special issue to commemorate the unique achievements of Chandrasekhar. We appreciate the support received from the Editors and staff of *Pramana*.

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