



Australian Government
Australian Research Council

2017 Australian Laureate Fellowships

Fellowships



Professor Mathai Varghese

Current Organisation
Administering Organisation
Discipline Area

The University of Adelaide
The University of Adelaide
Mathematics, Physics, Chemistry and Earth
Sciences

Fellowship project summary:

Advances in index theory and applications (FL170100020)

The project aims to develop novel techniques to investigate Geometric analysis on infinite dimensional bundles, as well as Geometric analysis of pathological spaces with Cantor set as fibre, that arise in models for the fractional quantum Hall effect and topological matter, areas recognised with the 1998 and 2016 Nobel Prizes. Building on the applicant's expertise in the area, the project will involve postgraduate and postdoctoral training in order to enhance Australia's position at the forefront of international research in Geometric Analysis. Ultimately, the project will enhance Australia's leading position in the area of Index Theory by developing novel techniques to solve challenging conjectures, and mentoring HDR students and ECRs.

Australian Research Council funding: \$1,638,060

About Professor Varghese

Professor Mathai Varghese is the Director of The University of Adelaide's Institute for Geometry and its Applications, Elder Professor of Mathematics in the School of Mathematical Sciences and an Adjunct Professor of Mathematics within the Mathematical Sciences Institute at The Australian National University. Professor Varghese is a major contributor to the geometric analysis field, and is internationally renowned for the Mathai-Quillen formalism in topological field theories, and several other seminal articles. Professor Varghese has fellowships at the Australian Academy of Science (2011), the Australian Mathematical Society (2000) and the Royal Society of South Australia (2013). Professor Varghese was awarded the Australian Mathematical Society Medal in 2000.

Find out more about Professor Varghese and his research by visiting his profile page on [The University of Adelaide website](#).

For further information about this funding scheme, please visit the [Australian Laureate Fellowships scheme page on the ARC website](#).