



RESEARCH FELLOW - COMPUTATIONAL AND NUMERICAL ANALYSIS

DEPARTMENT/UNIT	School of Mathematics
FACULTY/DIVISION	Faculty of Science
CLASSIFICATION	Level A
DESIGNATED CAMPUS OR LOCATION	Clayton campus

ORGANISATIONAL CONTEXT

Everyone needs a platform to launch a satisfying career. At Monash, we give you the space and support to take your career in all kinds of exciting new directions. You'll have access to quality research, infrastructure and learning facilities and opportunities to collaborate internationally. We're a university full of energetic and enthusiastic minds, driven to challenge what's expected, expand what we know, and learn from other inspiring, empowering thinkers. Discover more at www.monash.edu.

The five Schools of the **Faculty of Science** offer a large and diverse range of disciplines in undergraduate and postgraduate courses. Ten Schools from other university faculties contribute to science teaching at all levels, allowing students to choose their studies from physical, biological, biomedical, behavioural, environmental, mathematical and computer sciences. The Faculty of Science has a strong research reputation. The Faculty's research spans the theoretical to the applied, contributes to new knowledge and technologies, and challenges how we interact with the world. To learn more about the Faculty of Science, please visit our website: www.monash.edu/science.

The **School of Mathematics** (www.monash.edu/science/schools/school-of-mathematics) is one of the largest of the five Schools in the Faculty, and has close working collaborations with other Schools/Departments such as Physics and Astronomy, Earth, Atmosphere and Environment, Computer Science; and other faculties such as Business and Economics, Arts, Medicine, IT and Engineering. The School has strong links with outside institutions such as CSIRO, the Defence Science and Technology Organisation, and the National Australia Bank and a large number of research institutes and universities around the world. In the 2018 ERA assessment, Monash University received a top rating of 5 (well above world standard) for applied mathematics. With the continued expansion and strengthening of Monash Mathematics, the international standing of Mathematics at Monash will continue on its upward trajectory.

POSITION PURPOSE

A Level A research-only academic is expected to contribute towards the research effort of the University and to develop their research expertise through the pursuit of defined projects relevant to the particular field of research.

The Research Fellow works in the ARC-funded project “Interface-aware numerical methods for stochastic inverse problems”. The role includes the design and analysis of hybrid high-order schemes for partial differential equations with interfaces. The methods will rely on polytopal meshes obtained from adaptive tree-based unfitted meshes. The research also includes optimal and scalable parallel multilevel solvers for the discrete systems arising from hybrid approximations. The role will possibly include the combination of these tools with multilevel Monte Carlo methods and its application to stochastic inverse problems in subsurface modelling.

Reporting Line: The position reports to the Chief Investigator

Supervisory Responsibilities: Not applicable

Financial Delegation: Not applicable

Budgetary Responsibilities: Not applicable

KEY RESPONSIBILITIES

Specific duties required of a Level A research-only academic may include:

1. The conduct of research under limited supervision either as a member of a team or, where appropriate, independently and the production or contribution to the production of conference and seminar papers and publications from that research
2. Involvement in professional activities including, subject to availability of funds, attendance at conferences and seminars in the field of expertise
3. Limited administrative functions primarily connected with the area of research of the academic
4. Occasional contributions to the teaching program as determined by the requirements of the School
5. Guidance within the field of the staff member’s research to postgraduate and honours students
6. Attendance at meetings associated with research or the work of the organisational unit to which the research is connected and/or at departmental, school and/or faculty meetings and/or membership of a limited number of committees
7. Other duties as directed from time to time

KEY SELECTION CRITERIA

Education/Qualifications

1. The appointee will have:
 - A doctoral qualification in Mathematics or a related field, with a strong background in numerical methods for partial differential equations.

Knowledge and Skills

2. Strong background in numerical analysis and scientific computing
3. Computer skills using Linux shell, git, GitHub, etc. Experience implementing numerical algorithms using Julia, Python, C, C++, or FORTRAN
4. Demonstrated capacity for the preparation of refereed research publications, commensurate with the career of the applicant
5. Ability to give guidance to and work with honours or postgraduate students within the discipline

6. The ability to work both independently in a research environment and as part of an inter-disciplinary research team
7. High level organisational skills, with demonstrated capacity to establish and achieve goals
8. Excellent written and oral communication skills
9. A demonstrated capacity to work in a collegiate manner with other staff in the workplace

OTHER JOB RELATED INFORMATION

- Travel to other campuses of the University may be required
- There may be a requirement to work additional hours from time to time
- There may be peak periods of work during which taking of leave may be restricted

GOVERNANCE

Monash University expects staff to appropriately balance risk and reward in a manner that is sustainable to its long-term future, contribute to a culture of honesty and integrity, and provide an environment that is safe, secure and inclusive. Ensure you are aware of and adhere to University policies relevant to the duties undertaken and the values of the University. This is a standard which the University sees as the benchmark for all of its activities in Australia and internationally.