POSITION SUMMARY
To provide scientific support to an ARC research project entitled “Fast algorithms for zeta functions of algebraic varieties”.

ORGANISATIONAL ENVIRONMENT
Overview of the Faculty/School/Divisional Work Unit
The appointee will be a member of the Algebra and Number Theory research group within the School of Mathematics and Statistics in the Faculty of Science. The School, located in Sydney, Australia, is one of the nation’s leading centres for research in mathematics and statistics.

Reporting Relationships
Supervisor’s title: Dr David Harvey

KEY DUTIES & RESPONSIBILITIES

- Carry out original research in computational number theory, especially to develop algorithms for computing zeta functions of algebraic varieties over finite fields.
- Collaborate on research problems with Dr David Harvey.
- Contribute to the compilation of research articles for publication in peer-reviewed academic journals.
- Communicate research outcomes at conferences, in seminars, and in peer-reviewed journals.
- Cooperate with all health and safety policies and procedures of the university and take all reasonable care to ensure that your actions or omissions do not impact on the health and safety of yourself or others.
SELECTION CRITERIA

Essential criteria:

- PhD in number theory or arithmetic algebraic geometry (preferably with a focus on algorithmic/computational techniques); or being close to completion of the PhD.
- Demonstrated capacity for research, as evidenced by publications in internationally recognised mathematics or computer science journals or conference proceedings.
- Excellent written and oral communication skills.
- Demonstrated ability to work effectively both independently and as part of a team.
- Knowledge of computer programming.
- Knowledge of health and safety responsibilities and commitment to attending relevant health and safety training.

Desirable criteria:

- Expertise in algorithms for computing zeta functions of algebraic varieties over finite fields, especially p-adic algorithms.
- Familiarity with symbolic computation techniques relevant to computational number theory (e.g., fast Fourier transforms, Gröbner bases, fast linear algebra).
- Proficiency in a high-level computer algebra system, such as Sage, MAGMA, Mathematica, or Maple.
- Proficiency in a compiled language such as C or C++, including optimisation techniques.
- Experience with Unix and high-performance computing systems.

It is not the intention of the position description to limit the scope or accountabilities of the position but to highlight the most important aspects of the position. The aspects mentioned above may be altered in accordance with the changing requirements of the role.