

ニュージーランド University of Canterbury の Simon Brown 教授が下記の通り、PhD scholarships の募集をされています。

締め切りまであまり時間ありませんが、海外留学にご興味がある学生さんにご周知いただければと存じます。よろしくお願ひ致します。

PhD scholarships in Physics in New Zealand

Neuromorphic Computing: A Computer Chip That Thinks Like The Brain TWO PhD scholarships in Physics in New Zealand

TWO 3-year PhD Scholarships are available to work on brain-like (or "neuromorphic") computing using electronic devices that are self-assembled from nanoparticles (or "clusters"). We have recently shown that these complex networks of memristor-like elements have both brain-like structures and strongly correlated brain-like patterns of electrical signals [1-3]. The main research goals of the project are to exploit these signals in order to implement on-chip computational processes such as pattern recognition and time series prediction.

Projects are available that focus on each of

- * Nanoscale physics in the devices
- * Network properties / percolation theory
- * Brain-like computation
- * Computer simulations of the devices

This work builds on fifteen years of experience in building cluster-based electronic devices and is part of a project that has recently been funded by both New Zealand's Marsden Fund and the MacDiarmid Institute which is a national Centre of Research Excellence.

The successful applicant will enjoy access to the facilities and programs of the Institute. The scholarship is worth \$27,500 per annum and includes all student fees.

The successful candidate will have enthusiasm, a good honours or masters degree in physics (or related subject such as electrical engineering or computer science), and a desire to work in a multi-institutional, multi-disciplinary, collaborative environment.

Covid-19: New Zealand is essentially covid-free.

Please note that all applications must include:

- A full Curriculum Vitae, INCLUDING your University transcript (i.e. list of grades awarded).
- The names of at least two people who are prepared to act as referees.

Applications received before the 30 June 2021 will be given preference.

All applications should be emailed to

Simon.Brown@canterbury.ac.nz<mailto:Simon.Brown@canterbury.ac.nz>.

For further information go to:

<https://www.canterbury.ac.nz/science/schools-and-dpartments/phys-chem/research/nano/>

1. Matthew D. Pike, Saurabh Kumar Bose, Joshua Brian Mallinson, Susant Kumar Acharya, Shota Shirai, Edoardo Galli, Steven J. Weddell, Philip J. Bones, Matthew D. Arnold, and Simon Anthony Brown, 'Atomic scale dynamics drive brain-like avalanches in percolating nanostructured networks', *Nano Letters* 20, 3935 (2020).

2. S. Shirai, S. K. Acharya, S. K. Bose, J. Mallinson, E. Galli, M. Pike, M. D. Arnold and S. A. Brown, 'Long-range temporal correlations in scale-free neuromorphic networks', *Network Neuroscience* 4, 432 (2020).

3. J. B. Mallinson, S. Shirai, S. K. Acharya, S. K. Bose, E. Galli & S. A. Brown, 'Avalanches and criticality in self-organised nanoscale networks', *Science Advances* 5, eaaw8438 (2019).