

CTAC-2020

Sydney, Australia

30 August – 2 September 2020

The 20th biennial Computational Techniques and Applications Conference was originally planned to take place at the University of New South Wales from 30 August until 2 September, 2020. As the Covid-19 pandemic worsened, it became clear that travel restrictions and other measures meant that the conference could not be held in its usual form, and the organising committee decided to move the conference online.

The ANZIAM Special Interest Group in Computational Mathematics is responsible for this series of conferences, the first of which was held in 1981. Participants of the conference are able to submit a short article based on their presentation for publication in this special section of the ANZIAM Journal (Electronic Supplement). The editors, William McLean and Shev MacNamara, thank the referees whose efforts have helped improve the quality of these conference proceedings.

The eight keynote presentations were as follows.

- **Konstantin Brenner, University of Nice Sophia-Antipolis**
Numerical modeling of two-phase flow in fractured porous media.
- **Michael Feischl, TU Vienna**
Numerical analysis and machine learning.
- **David Harvey, UNSW**
Fast Fourier transforms of prime length.
- **Trevor McDougall, UNSW**
Some mathematical aspects of physical oceanography.
- **Kate Smith-Miles, University of Melbourne**
In search of algorithmic trust . . . show us the stress-testing!
- **Catherine Powell, University of Manchester**
Adaptive and multilevel stochastic Galerkin methods for PDEs with uncertain inputs.

- **Aretha Teckentrup, University of Edinburgh**
Convergence of Gaussian process emulators with estimated hyper-parameters.
- **Alex Townsend, Cornell University**
The ultraspherical spectral method.

The presentation by Trevor McDougall was a public lecture. The conference attracted 131 registered participants, and featured a total of 81 contributed talks.

Organising Committee

Josef Dick	UNSW
Bishnu Lamichhane	University of Newcastle
Ngan Le	Monash University
Quoc Thong Le Gia (Chair)	UNSW
Shev MacNamara	UTS
William McLean	UNSW
Vera Roschchina	UNSW
Thanh Tran	UNSW

Scientific Committee

Steve Armfield	University of Sydney
Jerome Droniou	Monash University
Frances Kuo	UNSW
Markus Hegland	ANU
Stephen Roberts	ANU
Ian H. Sloan (Chair)	UNSW
Ian Turner	QUT

Acknowledgements We thank the following sponsors.

- School of Mathematics and Statistics, UNSW.
- The New South Wales Government.
- The Modelling and Simulation Society of Australia and New Zealand.
- The Mathematics of Computation and Optimization (MoCaO) special interest group of the Australian Mathematical Society.