

SEquences and Their Applications (SETA) 2014

University of Melbourne

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The international conference on SEquences and Their Applications (SETA) is a biannual conference series devoted to the mathematical theory of sequences used in wireless communications, cryptography and their applications. This is a premier conference for researchers working in mathematics, communication and computer science in the specific area of pseudorandom sequences. The conference provides a forum for the research communities of these domains, and covers all of the fundamental, computational and implementation aspects of these fields. The SETA proceedings were published by Springer as Volume 8865 of *Lecture Notes in Computer Science*.

Organising committee

- Associate Professor and Reader, Udaya Parampalli, The University of Melbourne (General Chair)
- Associate Professor and Reader, Sanming Zhou, The University of Melbourne (Local Organising Committee Member)
- Dr Leonie Simpson, Queensland University of Technology (Local Organising Committee Member)
- Dr Kai-Uwe Schmidt, (Program Chair)
- Dr Arne Winterhof, (Program Chair)

The conference brought together researchers from different areas where sequences play a crucial role such as cryptography, coding theory, quasi-Monte Carlo methods, wireless communication, design theory, discrete mathematics, and number theory. In particular, synergies between mathematicians and engineers were deepened.

This was the eighth SETA conference. The previous seven conferences were held in Singapore 1998, Bergen (Norway) 2001, Seoul (South Korea) 2004, Beijing (China) 2006, Lexington (USA) 2008, Paris (France) 2010, and Waterloo (Canada) 2012.

The conference was opened by Professor Iven Mareels, Dean of Engineering, on Monday 24 November 2014. A special highlight was hearing from Professor Solomon Golomb, who spoke about the importance of sequences research to Engineering,

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communications and radar. He recalled the early history of developments in shift register sequences, a research area he pioneered while working at the Jet Propulsion Laboratory. Professor Solomon Golomb is one of the founding members of the SETA conference. Professor Golomb was recently awarded the National Medal of Science, an honour bestowed by the President of the United States to individuals in science and engineering who have made important contributions to the advancement of knowledge in the fields.

The conference included four invited talks on contemporary topics in sequences theory and applications.

The first talk, on Monday 24 November, was delivered by Professor Kathy Horadam (Royal Melbourne Institute of Technology), an eminent mathematician in Hadamard matrices.

On Tuesday 25 November, Professor Tor Helleseth (University of Bergen, Norway) presented a proof of Lin Conjecture on two level autocorrelation sequences.

On Wednesday 26 November, Associate Professor Bernhard Schmidt (Nanyang Technological University, Singapore) spoke on recent advances in Circulant Hadamard matrices and twisted cyclotomic integers.

On Thursday 27 November, Associate Professor Josef Dick (University of New South Wales) presented recent results on the inverse of the star-discrepancy problem and the generation of pseudorandom numbers. These talks were interesting and well received by conference participants.

The Program Committee of SETA 2014 received 36 qualified submissions. Each submission was refereed by at least two experts. The Program Committee selected 24 papers for presentation at the conference and inclusion in the conference proceedings. In addition, the proceedings contain two refereed invited papers; based on the presentations given by Josef Dick and Kathy Horadam, respectively.

Organisers' opinion of success

The final numbers were 34 registered participants and six volunteers, which met our expectations. We had participation from five universities (including the host university) and from one industry (Dr Andrew Tirkel of Scientific Technologies) in Australia.

The organisers were happy that the conference was successful. The four invited talks and 20 regular presentations were well received. Audience members asked questions of the presenters following the talks, leading to interesting discussions. We had a good mixture of sessions from different areas where sequences play an important role such as correlations, cryptography and quasi-Monte Carlo methods. We believe this further deepened the interaction between mathematicians and engineers.

The excursion to Philip Island and the Royal Botanic Gardens in Cranbourne on Wednesday 26 November was a great success. This was the first time the SETA conference has been held in the Southern hemisphere, and many of our visitors

from the northern hemisphere expressed interest in the local flora and fauna. The excursion provided an opportunity to see koalas and penguins, and the bus trip provided an opportunity for continuing informal discussions.

The gender distribution of participants at the conference was 7 females and 27 males. The special presenters included a female speaker. AMSI's schemes providing support to encourage women mathematicians to attend the event were noted in the event promotion through the AMSI newsletter. However, no female participants approached the organizers to request the offered support.

We received positive comments for the organization of the workshop.