Low Correlation Zone Sequences

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Date: 26 November 2009 (Thursday)
Time: 10.30 am – 11.30 am
Venue: SPMS-Executive Classroom 1, MAS-03-06
School of Physical and Mathematical Sciences

Low correlation zone (LCZ) sequences were introduced to address a specific requirement of a generalized quasi-synchronous code-division multiple access (QS-CDMA) communication system. In this talk, I will introduce the problem of low correlation zone sequence design and present basic schemes using Interleaving techniques. The low correlation zone requirement presents new challenges in the area of bounds involving family size and low correlation parameters. I will talk about some of the results on limitations arises from the bounds. There have been several papers dealing with the construction methods involving finite fields, finite rings and several combinatorial objects such as Hadamard matrices. The talk will include key constructions and a brief survey some recent results in the area.

Speaker Biography

Udaya Parampalli obtained his doctoral degree in Electrical Engineering from Indian Institute of Technology (I.I.T), Kanpur, in 1993. From 1992 to July 1996, he worked in Industry as a Member Research Staff at Central Research Laboratory, Bharat Electronics, Bangalore. From 1997 to 2000, he was an ARC research associate at the Department of Mathematics, RMIT University, Melbourne, Australia. Since February 2000, he has been working at the Department of Computer Science and Software Engineering, of the University of Melbourne, Australia. His research interests are in the area of coding theory, cryptography and sequences over finite fields and rings for communications and information security.

In the second half of 2008, he is a Visiting Professor in Department of Computer Science at University of Calgary, Canada.

Professional Activities: IEEE member since 1989. Actively participating Information theory society in terms of refereeing for ISITs and IT transactions since he came to Australia in 1997. Served as program committee member in various conferences and workshops in the area of sequences. Organized workshops with the support of Australian Mathematics Sciences Institute (AMSI) in the area of pairing based cryptography and sequences for communications. He is one of the experts in sequences area in information theory. He is a Guest editor for a Special Section on Sequence Design and its Application in Communications to be published in the IEICE Transactions on Fundamentals of Electronics, Communications and Computer Sciences in 2008.

He is a co-chair of Technical Program Committee of IWSDA 2007, the third International Workshop on Signal Design and Its Applications in Communications held in Chengdu, China on September 23-27, 2007.

Host: Prof. Ling San, Division of Mathematical Sciences, School of Physical and Mathematical Sciences