

### Codes and Modular forms: a dictionary

**Dr. Patrick Solé**  
Director of Research  
CNRS, I3S  
Sophia Antipolis, France



**Date :** 19 February 2009 (Thursday)  
**Time :** 10.30 am – 11.30 am  
**Venue:** SPMS-Executive Classroom 1, MAS-03-06  
School of Physical and Mathematical Sciences

Since the 70's there are isomorphisms between ring of polynomial invariants of certain finite groups and certain rings of modular forms. These rings of polynomial invariants contain the weight enumerators of self dual codes. The theta series of unimodular lattices are amongst these modular forms. We survey known results on Jacobi and Siegel modular forms, and give recent results on modular forms for special levels.

#### Speaker Biography

Patrick Solé received the Ingénieur and Docteur-Ingénieur degrees both from Ecole Nationale Supérieure des Télécommunications, Paris, France, in 1984 and 1987, respectively, and the habilitation à diriger des recherches from Université de Nice-Sophia Antipolis, Sophia Antipolis, France, in 1993. He has held visiting positions in Syracuse University, Syracuse, NY, from 1987 to 1989, Macquarie University, Sydney, Australia, from 1994 to 1996, and Lille University, Lille, France, from 1999 to 2000. Since 1989, he has been a permanent member of the CNRS Laboratory I3S, Sophia Antipolis, France, and became Directeur de Recherche in 1996. His research interests include coding theory (codes over rings, quasi-cyclic codes), interconnection networks (graph spectra, expanders), vector quantization (lattices), and cryptography (boolean functions, pseudo random sequences). Dr. Solé is the recipient (jointly with Hammons, Kumar, Calderbank, and Sloane) of the IEEE Information Theory Society Best Paper Award in 1994.

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

Queries to: Ms Denise Lim, [deniselimrj@ntu.edu.sg](mailto:deniselimrj@ntu.edu.sg), Tel: 6513 7428

#### **SCHOOL OF PHYSICAL AND MATHEMATICAL SCIENCES**

NANYANG TECHNOLOGICAL UNIVERSITY  
SPMS-MAS-03-01, 21 NANYANG LINK, SINGAPORE 637371  
FAX: +65 6515 8213 TEL: +65 6513 7423