UPM
UNIVERSITI PUTRA MALAYSIA
BERILMU BERBAKTI

INSPEM WEEKLY SEMINAR

Date & Time
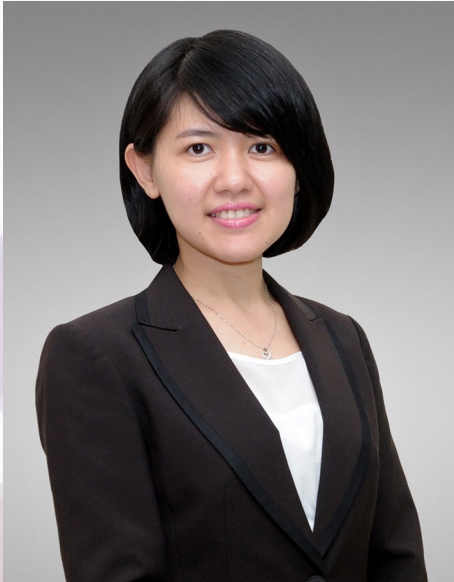
4th May 2018, Friday @ 3.15 pm

Venue

Al-Farabi Seminar Room, Second Floor, INSPEM

Presenter

Dr. Chen Chuei Yee
Associate Researcher
Laboratory of Cryptography, Analysis and Structure

Topic

Quasiminimizers and Their Roles in the Calculus of Variations

Abstract

The direct method is a powerful abstract method for proving the existence of minimizers for variational problems and followed by proving the regularity of the minimizer. However, the function involved can be complicated and hence seeking a minimizer and proving its regularity using the direct method may not be fruitful. In this talk, we introduce the notion of quasiminimality which is seen as a unifying tool in treating different problems due to its wide range of application that leads to a broad and flexible class of maps under general circumstances. The theory of quasiminimizer has been extended to minimizers of variational integrals, weak solutions of elliptic systems, quasi-regular mappings, potential theory, to name a few. The most attractive feature of quasiminimizer is its regularity properties which include in the scalar case Holder continuity, weak maximum principle and Harnack inequality, and for the vectorial case higher integrability in the interior. Moreover, quasiminimizers are more flexible than solutions of differential equations and minimizers under perturbation. A few examples of quasiminimizers will be discussed, particularly focusing on the existence of good minimizing sequences of non-trivial variational integrals containing quasiminimizers of an inhomogeneous p-Dirichlet integral. This is then followed by the regularity properties of quasiminimizers.