



**UPM**  
UNIVERSITI PUTRA MALAYSIA  
BERILMU BERBAKTI

# INSPEM WEEKLY SEMINAR

21/2018

## Date & Time

29<sup>th</sup> June 2018, Friday @ 3.15 pm

## Venue

Al-Farabi Seminar Room, Second Floor,  
INSPEM

## Presenter



**Prof. Dr. Abdulla Azamov**  
Visiting Scientist  
Laboratory of Cryptography, Analysis and  
Structure

## Topic

**Pursuit-Evasion Games on the Graphs Consisted of  
Edges of Regular Polytopes**

## Abstract

The graphs consisted of 1-skeleton of regular polytopes have a rich symmetry which allows us to study pursuit-evasion games on them. A qualitative game problem of  $n$  pursuers and one evader is considered on such a graph  $M$ . It is assumed that all players have the same maximal speed. We say that pursuers win the game if there exist strategies of pursuers such that the state of a pursuer coincides with that of evader at some time. If there exists a strategy of evader such that the state of evader doesn't coincide forever with that of any pursuer, then we say that evader wins the game. There is a number  $N(M)$  such that (a) if  $n < N(M)$ , then the evader wins the game; (b) if  $n \geq N(M)$ , then pursuers win the game. The aim of the research is to determine  $N(M)$  when  $M$  is a regular polytope in  $\mathbb{R}^d$ ,  $d = 3, 4, 5, \dots$

**Key words:** Game, strategy, pursuer, evader, graph, regular polytope.