

Department of Decision Sciences

## Occasional Seminars

**Wednesday, 4<sup>th</sup> May 2016**

**4:00 pm**

Room 3-E4-SR03

Via Rontgen 1, 3rd floor

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## **Kidney Exchange Program: game theory approaches**

### Abstract:

A patient suffering from renal failure usually receives a kidney transplant from a deceased donor, or from a compatible living donor that is a patient's relative or friend. However, these two possibilities only satisfy a tiny fraction of the demand. To increase the probability of a renal patient being transplanted, kidney exchange programs have been set, allowing exchanges between incompatible patient-donor pairs (i.e., the donor of an incompatible pair donates to a compatible patient in another pair and vice-versa).

In this context, we explore two game theory research directions: 1) a sequential game, where after an exchange plan has been set, an 'enemy' attacks the solution (new incompatibilities are discovered), 2) a simultaneous game, where two self-interested countries/hospitals share their internal pools of incompatible patient-donor pairs. We present the algorithmic ideas to compute the optimal strategies in both games.