DATE: Wednesday, February 29, 2012
TIME: 11:00 to 11:50 p.m.
ROOM: E575

TITLE: Groups that are transitive on all partitions of a finite set

ABSTRACT:
Let $\ell_1, \ldots, \ell_r$ be positive integers whose sum is $n$. Let $K_1, \ldots, K_r$ be subsets of the $n$-element set $[n] = \{1, \ldots, n\}$ such that these sets form a partition $P$ of $[n]$ and $|K_i| = \ell_i$. We say that $[\ell_1, \ldots, \ell_r]$ is the shape of $P$. Let $\mathcal{P}$ be the set of all partitions of $[n]$ with shape $[\ell_1, \ldots, \ell_r]$. We determine all subgroups of $S_n$ that are transitive on $\mathcal{P}$ for every possible shape $[\ell_1, \ldots, \ell_r]$, as well as determine all subgroups of $S_n$ that are transitive on the set of all ordered partitions of every possible shape. As an application, we determine which Johnson graphs are isomorphic to Cayley graphs. This is joint work with Aleksander Malnič.

Light refreshments