Math 595 LP (Spring 2010)
Stable processes and its Potential theory

- **Instructor:** Panki Kim (331 Illini Hall)
- **Text:** No text, lecture note will be distributed in class.

General Description:

There are important and beautiful connections between Probability and classical potential theory. Such connection can be extended to a large class of Markov processes. This course will treat the fundamentals of symmetric stable process and it potential theory. Our principal aim is to cover some of recent developments of this topic.

Course topics:

1. Elements of Probability Theory.
2. Review on Levy process
3. Symmetric Stable process
4. Symmetric Stable process in open subsets
5. Fractional Laplacian and its harmonic function
6. Properties of harmonic function with respect to Fractional Laplacian
7. Intrinsic Ultracontractivity
8. Dirichlet Heat Kernel Estimates

**Prerequisite:** Graduate probability and measure theory (Math540 and Math561)

**References:**