INTRINSIC ULTRACONTRACTIVITY FOR NON-SYMMETRIC LÉVY PROCESSES

Panki KIM *Seoul National University, South Korea*, E-mail: pkim@snu.ac.kr

KEY WORDS: stable processes, non-symmetric stable process, Lévy process, non-symmetric Lévy process, semigroups, non-symmetric semigroups, parabolic boundary Harnack principle, intrinsic ultracontractivity

MATHEMATICAL SUBJECT CLASSIFICATION: Primary: 47D07, 60J25; Secondary: 60J45.

Abstract: Recently in [1], we extended the concept of intrinsic ultracontractivity to non-symmetric semigroups and proved that for a large class of non-symmetric diffusions Z with measure-valued drift and potential, the semigroup of Z^D (the process obtained by killing Z upon exiting D) in a bounded domain is intrinsic ultracontractive under very mild assumptions.

In this talk, we discuss the intrinsic ultracontractivity for non-symmetric discontinuous Lévy processes. We prove that, for a large class of non-symmetric discontinuous Lévy processes X in any bounded open set D is intrinsic ultracontractive. In particular, for the non-symmetric stable process X, the semigroup of X^D is intrinsic ultracontractive for any bounded set D.

References

[1] P. Kim & R. Song (2007). Intrinsic ultracontractivity of non-symmetric diffusion semigroups in bounded domains, Preprint

[2] P. Kim & R. Song (2007). Intrinsic ultracontractivity for non-symmetric Lévy processes, To appear in *Forum Math.*