

# SOME SPECTRAL PROBLEMS ASSOCIATED TO NON-SELF-ADJOINT SELF-SIMILAR SEMI-GROUPS

MLADEN SAVOV

We start this talk by showing a one-to-one correspondence between the class of invariant Lamperti-Feller semi-groups and a subset of negative definite functions. It turns out that these non-self-adjoint semi-groups are closely related to positive self-similar Feller processes which were introduced by Lamperti in 72 and have been studied intensively recently. We proceed by showing the existence of an intertwining relationship between this class of semi-groups and the semi-group of a radial Ornstein-Uhlenbeck process, a self-adjoint diffusion. Exploiting this connection, we provide NSF conditions for the existence of discrete spectrum of this class of semi-groups. When the spectrum is purely discrete we discuss eigenvalues expansions by describing the sequence of eigenfunctions and co-eigenfunctions. We also explain why this spectral expansion is indeed possible on a space of functions which suffices for the description of the semi-groups but fails on the full Hilbert space generated by the invariant measures of the semi-groups.