Weighted ergodic theory, spectral decomposability and dimension free estimates

Alastair Gillespie (University of Edinburgh)

Let $\mathcal{T} = \{T_t\}_{t\in\mathbb{R}}$ be a strongly continuous one-parameter group of positive operators acting on $L^p(\mu)$, where μ is a σ-finite measure and $1 \leq p < \infty$. Using the known structure of such a group, we shall develop a weighted ergodic theory associated with $\mathcal{T}$ that parallels the classical theory of A_p weights. A weighted transference principle is obtained in this setting and used to establish dimension free weighted inequalities for some classical differential operators. We shall also discuss the connection with the spectral structure of mean bounded invertible operators U on weighted L^p spaces for which both U and U^{-1} are positive.

This is joint work with J.L. Torrea (Madrid) and E. Berkson (Illinois).