

Speaker: Matt Ziemke (USC)

Title: The closedness of generators of semigroups

Abstract: If X is a Banach space and F_1, F_2 are subspaces of the dual, X^* , then a $\sigma(X, F_1)$ - $\sigma(X, F_2)$ continuous semigroup of operators on X is a semigroup $(T_t)_{t \geq 0}$ such that the map $t \mapsto T_t A$ is $\sigma(X, F_2)$ continuous for all $A \in X$ and the map $A \mapsto T_t A$ is $\sigma(X, F_1)$ - $\sigma(X, F_2)$ continuous for all nonnegative t . There are many assumptions we can make about the subspaces F_1, F_2 which imply the generator of the semigroup is $\sigma(X, F_2)$ - $\sigma(X, F_1)$ closed (for example if $F_1 = F_2 = X^*$ or $F_1 = F_2 = X_*$) but not much has been done in the case when $F_1 \neq F_2$. In this talk, we will first look at the form of generators of quantum Markov semigroups (semigroups used to model irreversible open quantum systems) to motivate results for when $F_1 \neq F_2$ and then provide sufficient conditions which imply the generator is $\sigma(X, F_2)$ - $\sigma(X, F_1)$ closed.