Abstract:

The collection of Borel probability measures on a compact metric space $X$ can be made into a complete metric space via the Monge-Kantorovich metric. We generalize this well-known result to projection-valued measures. As an application, we use the Contraction Mapping Theorem on this complete metric space of projection-valued measures to provide an alternative method for proving a fixed point result due to P. Jorgensen (U of Iowa). This fixed point, which is a projection-valued measure, arises from an iterated function system on $X$, and is related to Cuntz algebras, and self-similar fractals.