Zdeněk Frolík

Images of uniform measures

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by

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The positive cone $\mathcal{M}_u^+(X)$ of the space $\mathcal{M}_u(X)$ of uniform measures has the remarkable property that the topology coincides with the weak topology (which is $\sigma(\mathcal{M}_u(X), U_b(X))$. Si ce $\mathcal{M}_u(X) = \mathcal{M}_u^+(X) - \mathcal{M}_u^+(X)$, uniformly to define the image under a mapping $f: X \longrightarrow Y$ of a uniform measure such that the res ting measure is uniform, it is enough to extend f to a continuou mapping of $\mathcal{M}_u^+(X)$ into $\mathcal{M}_u^+(Y)$ such that the obvious extensi is linear. Let $\mathcal{N}(X,Y)$ be the set of all $f: X \longrightarrow Y$ which admit such extension. The basic fact is that $\mathcal{N}(X,Y) = \mathcal{M}(X,Y)$ wher is introduced in the author's Measure-fine uniform spaces, Proc. Measure Conference in Oberwolfach, to appear in Lecture Notes in Math. Just for orientation note that for a continuous boun ded function f on X the following conditions are equivalent:

(1) $f \in \mathcal{N}(X,R)$

(2) $f \in \mathcal{M}(X,R)$

(3) For each $r > 0$, and each $\mu \in \mathcal{M}_u(X)$, there exist $\bar{f}$ and $\underline{f}$ in $U_b(X)$ such that $\underline{f} \leq f \leq \bar{f}$, and $|\mu|(\bar{f} - \underline{f}) < r$.

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