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Affine Valuations on Function Spaces

A function Z defined on a space of real-valued functions \mathcal{F} and taking values in an Abelian semigroup is called a *valuation* if

$$Z(f \vee g) + Z(f \wedge g) = Z(f) + Z(g) \tag{1}$$

for all $f, g \in \mathcal{F}$ such that $f, g, f \vee g, f \wedge g \in \mathcal{F}$. Here $f \vee g$ is the pointwise maximum of f and g , while $f \wedge g$ is their pointwise minimum.

We discuss classification results of valuations with values in \mathbb{R} , in the space of convex bodies and in the space of measures with a focus on valuations that are $\mathrm{SL}(n)$ invariant or intertwine the $\mathrm{SL}(n)$.

(Based on joint work with Andrea Colesanti and Fabian Mussnig)