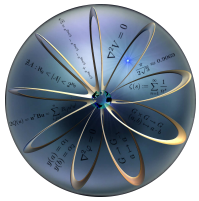

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multiplication operator on L^2

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Let $(X, \mathcal{A}, \mu)$ be a measure space and $f\colon X \to \mathbb{K}$ a measurable function. Then $M_f\colon \phi \mapsto f\phi$ is the multiplication operator with f defined on the subspace $Dom(M_f) = \{\phi \in L^2_{\mathbb{K}}(X, \mathcal{A}, \mu)\colon f\phi \in L^2_{\mathbb{K}}(X, \mathcal{A}, \mu)\}$. It plays an important role in quantum mechanics where the multiplication with the coordinates on $\mathbb{R}^n$ is the position operator.