Ghaemi, Mostafa; Manuilov, Vladimir M.; Moslehian, Mohammad Sal
Left multipliers of reproducing kernel Hilbert \( C^* \)-modules and the Papadakis theorem.
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Summary: We give a modified definition of a reproducing kernel Hilbert \( C^* \)-module (shortly, \( RKHC^* M \)) without using the condition of self-duality and discuss some related aspects; in particular, an interpolation theorem is presented. We investigate the exterior tensor product of \( RKHC^* M \)s and find their reproducing kernel. In addition, we deal with left multipliers of \( RKHC^* M \)s. Under some mild conditions, it is shown that one can make a new \( RKHC^* M \) via a left multiplier. Moreover, we introduce the Berezin transform of an operator in the context of \( RKHC^* M \)s and construct a unital subalgebra of the unital \( C^* \)-algebra consisting of adjointable maps on an \( RKHC^* M \) and show that it is closed with respect to a certain topology. Finally, the Papadakis theorem is extended to the setting of \( RKHC^* M \), and in order for the multiplication of two specific functions to be in the Papadakis \( RKHC^* M \), some conditions are explored.

MSC:
46L08 \( C^* \)-modules
46E22 Hilbert spaces with reproducing kernels (= (proper) functional Hilbert spaces, including de Branges-Rovnyak and other structured spaces)

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reproducing kernel Hilbert \( C^* \)-module; Papadakis theorem; frame; positive definite kernel; left multiplier