Reproducing kernel quaternionic Pontryagin spaces

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We discuss various aspects of reproducing kernel spaces with a possibly indefinite metric when the field of scalar is replaced by the skew–field of quaternions. A key fact which allows to consider the non–positive case is that Hermitian matrices with quaternionic entries have only real eigenvalues. This permits to extend the notion of functions with a finite number of negative squares to the present setting and we prove in particular that there is a one–to–one correspondence between such functions and reproducing kernel Pontryagin quaternionic spaces.

This is joint work with Michael Shapiro (IPN, Mexico).