

Asymmetric inner product and asymmetric quasi norm function

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Semi-inner products, that can be naturally defined in general Banach spaces over the real or complex number field, play an important role in describing the geometric properties of these spaces.

In the last forty years a large number of authors have used them as a powerful tool in investigating various properties.

Starting from its axiomatic, many researchers have made various modifications passing in its generalization.

Semi-scalar products mark the very first generalizations of the scalar product function. The strong bond between these functions with the norm function has made it possible to obtain a lot of interesting results which are connected with the orthogonality and convexity.

This paper attempts to generalize the semi scalar product concept according to G. Lumer by replacing Cauchy inequality with another inequality which is more generalized. Based on this attempt of generalization it is built a function which fulfills the conditions which are changed. In this paper it is also generalized quasi norm function by replacing homogeneity condition with a more restricted condition by producing this time a more generalized asymmetric semi norm function. As a result, in this paper it is defined the asymmetric inner product function and the asymmetric quasi norm function. Moreover, it is even given relation between these two.