Means and their preservers

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In this talk we survey our recent work on preservers related to operator means. We deal with morphisms with respect to means as operations on positive definite or semidefinite cones in operator algebras and consider preservers of norms of means in similar settings.

The first group of questions are motivated by the study of certain isometries while the second group of problems have a loose connection to quantum mechanical symmetry transformations. We discuss possibilities of transforming one mean to another one and, if time permits, we also present some characterizations of specific means.