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## On operator monotone and operator convex functions

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### Abstract

© 2016, Allerton Press, Inc. We establish monotonicity and convexity criteria for a continuous function  $f: \mathbb{R}_+ \rightarrow \mathbb{R}$  with respect to any  $C^*$ -algebra. We obtain an estimate for the measure of noncompactness of the difference of products of the elements of a  $W^*$ -algebra. We also give a commutativity criterion for a positive  $\tau$ -measurable operator and a positive operator from a von Neumann algebra.

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### Keywords

$C^*$ -algebra, commutativity of operators, Hilbert space, measurable operator, measure of noncompactness, operator convex function, operator monotone function, trace, von Neumann algebra,  $W^*$ -algebra