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IN-SPHERE PROPERTY AND REVERSE INEQUALITIES FOR MATRIX MEANS*

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Abstract. The in-sphere property for matrix means is studied. It is proved that the matrix power mean satisfies in-sphere property with respect to the Hilbert-Schmidt norm. A new characterization of the matrix arithmetic mean is provided. Some reverse AGM inequalities involving unitarily invariant norms and operator monotone functions are also obtained.

Key words. In-sphere property of matrix means, Matrix Heinz mean, Matrix power mean, Unitarily invariant norms.

AMS subject classifications. 46L30, 15A45.

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