OPERATOR VARIANCE-COVARIANCE INEQUALITY

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Joint work with Lj. Arambašić and D. Bakić

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Abstract. Let \((\mathcal{X}, \langle \cdot, \cdot \rangle)\) be a semi-inner product module over a \(C^*\)-algebra \(A\). For arbitrary \(n \in \mathbb{N}\) and \(x_1, \cdots, x_n \in \mathcal{X}\) we study the so-called \(n \times n\) Gram matrix \([\langle x_i, x_j \rangle]\) with entries in \(A\), construct a non-decreasing sequence of positive matrices in \(M_n(A)\) which is majorized by \([\langle x_i, x_j \rangle]\) and apply it to obtain generalizations of covariancevariance inequality, an extension of the Ostromowski inequality and an improvement of the Kantorovich inequality involving operator means.

2000 Mathematics Subject Classification. Primary 46L08; Secondary 26D15, 46L05, 47A30, 47A63.

Key words and phrases. \(C^*\)-algebra, positive element, Hilbert \(C^*\)-module, \(C^*\)-valued semi-inner product, operator inequality, norm inequality.