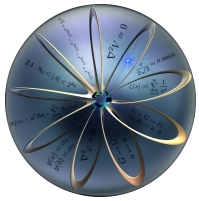

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commuting normal matrices are simultaneously diagonalizable

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All matrices in the below are complex $n \times n$ matrices.
Let A,B be normal matrices, $AB = BA$. Then there exists a unitary matrix Q such that

$$Q^H A Q = D_1 \ , Q^H B Q = D_2$$

where ^{H} is the conjugate transpose and D_1, D_2 are diagonal matrices.