On matrices with the dominant main diagonal

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Let $\mathcal{H}$ be a Hilbert space with the scalar product $(\cdot,\cdot)$. A bounded everywhere defined linear operator $A : \mathcal{H} \to \mathcal{H}$ is called an operator with the dominant main diagonal if for any orthonormal basis $\{e_j\}_{j=1}^{N}$, $N \le \infty$, the following inequality hold:

$$|(Ae_j, e_j)| \ge \sum_{k=1,\, k\ne j}^{N} |(Ae_j, e_k)|, \quad j = \overline{1, N}.$$

For a selfadjoint operator A a necessary and sufficient condition when this operator has the dominant main diagonal is given.

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