

On a Generalization of a Pontryagin Space Property

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Let \mathcal{K} be a Pontryagin space with κ negative squares, let $\mathcal{D} \subset \mathcal{K}$ be a dense linear set. Then \mathcal{D} contains a κ dimensional negative subspace (L.S. Pontryagin). This proposition is very important when one proves invariant subspace theorems in Pontryagin spaces. If \mathcal{K} is a Krein space there is no such a proposition and one has to suppose that the domain of an operator contains a maximal uniformly positive subspace (H. Langer). In the last years A.A. Shkalikov introduced some assumptions for dissipative operators in a Krein space which are sufficient for the existence of maximal semi-definite invariant subspaces and they are more general than the Langer condition.

The aim of this talk is to show that in a natural situation the Shkalikov assumptions imply the Langer condition.

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