Completion of operator matrices and some interesting applications

Dragana Cvetković Ilić[1]

[1]University of Nis, Faculty of Science and Mathematics, Department of Mathematics,
dragana@pmf.ni.ac.rs

We will discuss certain problems on completions of different types of operator matrices and using these results we will give certain necessary and sufficient conditions for the existence of solutions of some operator equations that belong to prescribed classes of operators. Appropriate representations of solutions for each class will be given. Also, we will discuss the existence of a positive solution of the operator equation $AXB = C$ which is still an open problem considered before only under additional conditions including that of regularity, as well as under certain range conditions such as $R(B) \subseteq \overline{R(A^*)}$. In this talk we will consider the existence of a positive solution of the operator equation $AXB = C$ without any additional range or regularity assumptions using two well-known results of Douglas and Zoltán. Also we will give a general form of a positive solution and consider some possible applications.

References

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