Group inverse of a linear relation

Slaviša Djordjević

In the case of linear operators in a Banach space, the study of isolated point in the spectrum is strongly connect with the theory of generalized inverses. For example, if zero is an isolated point in the spectrum of a linear bounded operator, it has a generalized Drazin inverse. For a linear relation (multivalued linear operator) in a Banach spaces the direct sum decomposition of it represents a powerful tool for determining the existence of a generalized inverses. In this talk, we introduce the notions of R-invariance and R-restriction that he best way to study the spectral decomposition associated with an isolated point in the spectrum of a linear relation. Our main attention is focus on the study the case when 0 or ∞ are isolated points in the spectrum of a linear relation or, even more, when there are a pole of the resolvent function.

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Autonomous University of Puebla, Faculty of Physics and Mathematics, Mexico

E-mail: `slavdj@fcfm.buap.mx`