Fuzzy Approximation Spaces and the $F$-transforms

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February 11, 2016

Abstract

The objective of this work is to associate the concepts of fuzzy rough sets and fuzzy topologies with the $F$-transforms. The notions of the direct $F^\uparrow$ and $F^\downarrow$ transforms are extended to the case where they are applied to an $L$-valued function on a space with an $L$-valued fuzzy partition. It is shown that these $F$-transforms are particular cases of upper and lower fuzzy approximation operators. Moreover, every $F$-transform component induces a continuous map between two associated fuzzy topological spaces.