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Transitive Decomposition of Fuzzy Preference Relations: The Case of Nilpotent Minimum

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Abstract: Transitivity is a fundamental notion in preference modelling. In this work we study this property in the framework of additive fuzzy preference structures. In particular, we depart from a large preference relation that is transitive w.r.t. the nilpotent minimum t-norm and decompose it into an indifference and strict preference relation by means of generators based on t-norms, i. e. using a Frank t-norm as indifference generator. We identify the strongest type of transitivity these indifference and strict preference components show, both in general and for the important class of weakly complete large preference relations.

Keywords: fuzzy relation; indifference; nilpotent minimum; strict preference; transitivity;

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