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Interval-valued preference structures. (English) Zbl 0960.91508
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Summary: Different languages that are offered to model vague preferences are reviewed and an interval-valued language is proposed to resolve a particular difficulty encountered with other languages. It is shown that interval-valued languages are well defined for De Morgan triples constructed by continuous triangular norms, conorms and a strong negation function. A new transitivity condition for vague preferences is suggested and its relationships to known transitivity conditions is established. A complete characterization of interval-valued preference structures is also provided.

MSC:

[91B08](#) Individual preferences
[91B14](#) Social choice
[03E72](#) Theory of fuzzy sets, etc.

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[fuzzy sets](#); [decision theory](#); [vague preferences](#); [interval-valued fuzzy relations](#)

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References:

- [1] Alsina, C., On a family of connectives for fuzzy sets, *Fuzzy sets and systems*, 16, 231-235, (1985) · [Zbl 0603.39005](#)
- [2] Alsina, C.; Trillas, E.; Valverde, L., On some logical connectives for fuzzy sets theory, *Journal of mathematical analysis and applications*, 93, 15-26, (1983) · [Zbl 0522.03012](#)
- [3] Anand, P., Are the preference axioms really rational?, *Theory and decision*, 23, 189-214, (1987)
- [4] Arrow, K., *Social choice and individual values*, (1963), Wiley New York
- [5] Barrett, C.R.; Pattanaik, P.K., On vague preferences, (), 69-84
- [6] Barrett, C.R.; Pattanaik, P.K.; Salles, M., On choosing rationally when preferences are fuzzy, *Fuzzy sets and systems*, 34, 197-212, (1990) · [Zbl 0688.90003](#)
- [7] Bilgiç, T., Measurement-theoretic frameworks for fuzzy set theory with applications to preference modelling, ()
- [8] Bilgiç, T.; Türkşen, I., Measurement-theoretic justification of fuzzy set connectives, *Fuzzy sets and systems*, 76, 3, 289-308, (1995) · [Zbl 0852.04006](#)
- [9] Bilgiç, T.; Türkşen, I., Model-based localization for an autonomous mobile robot, ()
- [10] Doignon, J.-P.; Monjardet, B.; Roubens, M.; Vincke, P., Biorder families, valued relations, and preference modelling, *Journal of mathematical psychology*, 30, 435-480, (1986) · [Zbl 0612.92020](#)
- [11] Dubois, D.; Prade, H., *Fuzzy sets and systems: theory and applications*, (1980), Academic Press New York · [Zbl 0444.94049](#)
- [12] Dubois, D.; Prade, H., A class of fuzzy measured based on triangular norms: a general framework for the combination of information, *International journal of general systems*, 8, 43-61, (1982) · [Zbl 0473.94023](#)
- [13] Dyer, J.; Fishburn, P.; Steuer, R.; Wallenius, J.; Zionts, S., Multiple criteria decision making, multiattribute utility theory: the next ten years, *Management science*, 38, 5, 645-654, (1992) · [Zbl 0825.90620](#)
- [14] Ellsberg, D., Risk, ambiguity and the savage axioms, *Quarterly journal of economics*, 75, 643-669, (1961) · [Zbl 1280.91045](#)
- [15] Fishburn, P.C., Binary choice probabilities: on the varieties of stochastic transitivity, *Journal of mathematical psychology*, 10, 327-352, (1973) · [Zbl 0277.92008](#)
- [16] Fishburn, P.C., On the theory of ambiguity, *International journal of information and management sciences*, 2, 2, 1-16, (1991) · [Zbl 0755.90003](#)
- [17] Fishburn, P.C., The axioms and algebra of ambiguity, *Theory and decision*, 34, 119-137, (1993) · [Zbl 0780.90004](#)
- [18] Fodor, J.C.; Roubens, M., Fuzzy strict preference relations in decision making, (), 1145-1149
- [19] Fodor, J.C.; Roubens, M., Fuzzy preference modelling and multicriteria decision support, vol. 14 of theory and decision library, () · [Zbl 0827.90002](#)
- [20] Fodor, J.C.; Roubens, M., Valued preference structures, *European journal of operational research*, 79, 2, 277-286, (1994) · [Zbl](#)

0812.90005

- [21] Gisin, V.B., On transitivity of strict preference relations, *Fuzzy sets and systems*, 67, 293-301, (1994) · [Zbl 0845.90011](#)
- [22] Gottwald, S., *Fuzzy sets and fuzzy logic: foundations of application from a mathematical point of view*, (1993), Vieweg Wiesbaden · [Zbl 0782.94025](#)
- [23] Machina, M.J.; Schmeidler, D., A more robust definition of subjective probability, *Econometrica*, 60, 4, 745-780, (1992) · [Zbl 0763.90012](#)
- [24] Mostert, P.S.; Shields, A.L., On the structure of semi groups on a compact manifold with boundary, *Annals of mathematics*, 65, 117-143, (1957) · [Zbl 0096.01203](#)
- [25] Ovchinnikov, S., Similarity relations, fuzzy partitions, and fuzzy orderings, *Fuzzy sets and systems*, 40, 107-126, (1991) · [Zbl 0725.04003](#)
- [26] Ovchinnikov, S., Social choice and lukasiewicz logic, *Fuzzy sets and systems*, 43, 3, 275-290, (1991) · [Zbl 0742.90010](#)
- [27] Ovchinnikov, S.; Roubens, M., On strict preference relations, *Fuzzy sets and systems*, 43, 319-326, (1991) · [Zbl 0747.90006](#)
- [28] Ovchinnikov, S.; Roubens, M., On fuzzy strict preference, indifference and incomparability relations, *Fuzzy sets and systems*, 47, 313-318, (1992) · [Zbl 0765.90002](#)
- [29] Ovchinnikov, S.; Roubens, M., On fuzzy strict preference, indifference and incomparability relations, *Fuzzy sets and systems*, 49, 15-20, (1992) · [Zbl 0768.90005](#)
- [30] Piaget, J., *Traité de logique: essai de logique opératoire*, (1949), A. Colin Paris
- [31] Roberts, F., *Measurement theory*, (1979), Addison-Wesley Reading, MA
- [32] Roy, B., The outranking approach and the foundations of electre methods, *Theory and decision*, 31, 1, 49-73, (1991)
- [33] Savage, L.J., *The foundations of statistics*, (1972), Dover Publications New York · [Zbl 0121.13603](#)
- [34] Schweizer, B.; Sklar, A., Statistical metric spaces, *Pacific journal of mathematics*, 10, 313-334, (1960) · [Zbl 0091.29801](#)
- [35] Schweizer, B.; Sklar, A., Associative functions and statistical triangle inequalities, *Universitatis debreceniensis. institutum mathematicum. publicationes mathematicae*, 8, 169-186, (1961) · [Zbl 0107.12203](#)
- [36] Schweizer, B.; Sklar, A., Associative functions and abstract semigroups, *Universitatis debreceniensis. institutum mathematicum. publicationes mathematicae*, 10, 69-81, (1963) · [Zbl 0119.14001](#)
- [37] Schweizer, B.; Sklar, A., Probabilistic metric spaces, (1983), North-Holland Amsterdam · [Zbl 0546.60010](#)
- [38] Skala, H.J., On many-valued logics, fuzzy sets, fuzzy logics and their applications, *Fuzzy sets and systems*, 1, 129-149, (1978) · [Zbl 0396.03024](#)
- [39] Suppes, P.; Krantz, D.; Luce, R.; Tversky, A., ()
- [40] Türkşen, I.B., Klein groups in fuzzy inference, (), 556-560
- [41] Türkşen, I.B., Interval valued fuzzy sets based on normal forms, *Fuzzy sets and systems*, 20, 191-210, (1986) · [Zbl 0618.94020](#)
- [42] Türkşen, I.B.; Bilgiç, T., Interval valued strict preference, (), 593-599 · [Zbl 0868.90004](#)
- [43] Türkşen, I.B.; Bilgiç, T., Interval-valued strict preference with zadeh triples, *Fuzzy sets and systems*, 78, 2, 183-195, (1996), (Special Issue on fuzzy MCDM) · [Zbl 0868.90004](#)
- [44] Weber, S., A general concept of fuzzy connectives, negations and implications based on t-norms and t-conorms, *Fuzzy sets and systems*, 11, 115-134, (1983) · [Zbl 0543.03013](#)
- [45] Yuan, B.; Pan, Y.; Wu, W., On normal form based interval-valued fuzzy sets and their applications to approximate reasoning, *International journal of general systems*, 23, 3, 241-254, (1995) · [Zbl 0850.04004](#)

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