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Addition-min fuzzy relation inequalities with application in BitTorrent-like peer-to-peer file sharing system. (English) [Zbl 1397.90433](#)

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Summary: The data transmission mechanism in BitTorrent-like Peer-to-Peer (P2P) file sharing systems may be reduced to some addition-min fuzzy relation inequalities. The solution set of addition-min fuzzy relation inequalities plays an important role in the corresponding optimization problem. In this paper, we study some properties of the solutions to such a system. Convexity of the solution set and number of minimal solutions are discussed, with comparison to those of the classical max- T fuzzy relation equations or inequalities. Besides, vertex solution and variable-ordering minimal solution are also investigated, with application in BitTorrent-like P2P file sharing system. Two numerical examples are given to illustrate the feasibility and efficiency of the algorithm for solving the variable-ordering solution.

MSC:

[90C70](#) Fuzzy and other nonstochastic uncertainty mathematical programming

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[90C90](#) Applications of mathematical programming

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Keywords:

fuzzy relation inequalities; addition-min composition; fuzzy relation equation; minimal solution; convex set; BitTorrent-like P2P file sharing systems

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