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The bi-matrix games with interval payoffs and its Nash equilibrium strategy. (English)

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Summary: We consider bi-matrix games with interval pay-offs. First, based on interval number ranking methods for such games, we define Nash equilibrium solutions for pure strategies. On the basis of a comparative study on ordering interval numbers, inequality constraints involving interval coefficients are reduced in their satisfactory crisp equivalent forms and a satisfactory solution of the problem is defined. Moreover, we prove that these Nash equilibrium strategies exist in any bi-matrix games with interval pay-offs. A numerical example is also presented to illustrate the methodology.

MSC:

91A05 2-person games
91A10 Noncooperative games
90C70 Fuzzy and other nonstochastic uncertainty mathematical programming
90C20 Quadratic programming

Keywords:

bi-matrix game; interval numbers; interval game; Nash equilibrium