

## **A Method for Approximating Symmetrically Reciprocal Matrices by Transitive Matrices**

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The problem of approximating symmetrically reciprocal matrices by transitive matrices has received some attention recently. This problem has applications in multicriteria decision theory. Several approximation approaches have been suggested and analyzed. We here suggest another approach, called the multiplicative approach. We show that the optimal approximation in this sense may be found efficiently by transforming the problem into a known combinatorial optimization problem (the minimum cycle mean problem) for which efficient and simple combinatorial algorithms exist.

*Keywords:* Transitive matrix, symmetrically reciprocal matrix, approximation.