Abstract: The pioneering work of the mean-variance formulation proposed by Markowitz in 1950's has provided a scientific foundation for modern portfolio selection. Although the trade practice often confines portfolio selection with certain discrete features, the existing theory and solution methodologies of portfolio selection have been primarily developed for the continuous solution of the portfolio policy which could be far away from the real integer optimum. We consider in this paper an exact solution algorithm in obtaining an optimal lot solution to cardinality constrained mean-variance formulation for portfolio selection under concave transaction costs. Specifically, a convergent Lagrangian and contour-domain cut method is proposed for solving this class of discrete-feature constrained portfolio selection problems by exploiting some prominent features of the mean-variance formulation and the portfolio model under consideration. Computational results are reported using data from the Hong Kong stock market.

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