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Supporting financial decision-making based on time value of money with singularity functions in cash flow models

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Abstract

Existing budgeting approaches differ in whether or not they consider the time value of money. A novel use of singularity functions in construction management has the potential to enhance cash flow models in order to maximize their net present value. This type of function can model a complete schedule, which serves as the underlying timeline for all financial transactions. Their variable amounts and constraints are expressed by singularity functions, converted from costs via bills into payments, and compounded towards the overall net present value for financial decision-making. Contributions to the body of knowledge include deriving exact amounts of interest on variable balances for any duration, creating a valuation algorithm, and exploring how

the uneven solution space that cash flow profiles create can be searched successfully with a genetic algorithm.

Keywords: Cash flows financial management optimization singularity functions

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