# Article information:

Multi‐objective optimization of mechanically stabilized earth retaining wall using evolutionary algorithms - Kashani - 2022 - International Journal for Numerical and Analytical Methods in Geomechanics - Wiley Online Library  
<https://onlinelibrary-wiley-com.sid2nomade-2.grenet.fr/doi/full/10.1002/nag.3352>

# Article summary:

1. Mechanically stabilized earth (MSE) retaining walls are composite structures consisting of granular backfill, reinforcements, and a precast concrete block (wall facing).

2. Optimization algorithms have proven to be efficient tools in designing cost-effective MSE walls by using the minimum number of reinforcement elements to satisfy stability requirements.

3. Metaheuristic algorithms have been effective in solving highly complex engineering problems in civil engineering, including geotechnical engineering, transportation engineering, and construction management.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article titled "Multi-objective optimization of mechanically stabilized earth retaining wall using evolutionary algorithms" provides an overview of the use of metaheuristic algorithms in designing mechanically stabilized earth (MSE) retaining walls. The article highlights the advantages of MSE walls over traditional concrete cantilever retaining walls, including their ability to dissipate high differential settlements, be built to extreme heights, carry intensive loads, provide design and aesthetic versatility, and provide rapid construction.

The article also discusses the challenges involved in designing a cost-effective MSE wall, which include using the minimum number of reinforcement elements to satisfy stability requirements. To address these challenges, the article suggests using optimization algorithms such as metaheuristics.

While the article provides a comprehensive overview of the topic at hand, it is important to note that it may have some biases and limitations. For example, the article focuses primarily on the advantages of MSE walls without discussing potential drawbacks or risks associated with their use. Additionally, while the article mentions that cohesive soil has been widely used in many regions across the globe for economic reasons, it does not explore potential issues or limitations associated with this practice.

Furthermore, while the article acknowledges that there are numerous studies on different applications of metaheuristics in civil engineering and other fields, it does not provide a detailed analysis or critique of these studies. This lack of critical analysis may limit readers' ability to fully understand and evaluate the effectiveness of metaheuristic algorithms in solving complex engineering problems.

Overall, while the article provides valuable insights into optimizing MSE retaining walls using evolutionary algorithms, readers should approach its claims with caution and consider additional sources and perspectives before making any decisions related to MSE wall design or construction.

# Topics for further research:

* Potential drawbacks of mechanically stabilized earth retaining walls
* Risks associated with using cohesive soil in retaining wall construction
* Comparative analysis of mechanically stabilized earth walls and concrete cantilever walls
* Metaheuristic algorithms in civil engineering: a critical review
* Optimization techniques for retaining wall design and construction
* Innovative materials and technologies for retaining wall construction

# Report location:

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