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## Analysis of Hydraulic Pressure and Its Impact on the Stability of Earth Dams

### Communication Info

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- (1) Earth dam
- (2) stability
- (3) python
- (4) seepage
- (5) Monte-Carlo

### Abstract

The study addresses seepage through earth dams, focusing on continuous flow in porous media and slope stability. The hydraulic pressure distribution and its influence on slope stability were also analyzed. The Monte Carlo method is used to solve continuous flow problems (1), with results compared to the finite element method. (2)

Circular slices are analyzed to determine the factor of safety, and overall stability is evaluated using the Monte Carlo method, specifically the random walking approach. (3)

A Python program, based on the Bishop method, iteratively calculates the factor of safety against sliding, providing accurate and refined results. This technique proves valuable in seepage analysis, offering a robust tool for estimating hydraulic head in dam bodies. The study establishes theoretical foundations and provides practical application and comparative analysis with the finite element method (4), yielding meaningful conclusions.

In this work, pore water pressure in earth dams was also investigated, and its effect on dam stability was analyzed(5).

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