# Article information:

Quantitative analysis of the erosion process in horizontal cobble and gravel embankment piping via CFD-DEM coupling method | SpringerLink  
<https://link.springer.com/article/10.1007/s40430-022-03922-z>

# Article summary:

1. Internal erosion is a common problem in river dikes and embankments, and can cause significant damage.

2. Research on the seepage failure of piping has traditionally been done through physical experiments, but numerical simulation has become an important means of studying the evolutionary process of piping.

3. The coupled CFD-DEM method has been widely applied to the study of piping, and has been used to simulate the critical state of soils under varying hydraulic gradients and determine how soil stress–strain relationships respond to seepage flow.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article provides a comprehensive overview of the research that has been conducted on the erosion process in horizontal cobble and gravel embankment piping via CFD-DEM coupling method. It presents a clear summary of previous research on this topic, including physical experiments as well as numerical simulations using various methods such as DEM, FEM, and CFD-DEM. The article also provides detailed information about how these methods have been used to simulate the critical state of soils under varying hydraulic gradients and determine how soil stress–strain relationships respond to seepage flow.

The article is generally reliable and trustworthy; however, there are some potential biases that should be noted. For example, while it does provide an overview of previous research on this topic, it does not explore any counterarguments or present both sides equally. Additionally, there is no mention of possible risks associated with this type of research or any discussion about potential limitations or drawbacks that could arise from using these methods for studying erosion processes in embankments. Furthermore, there is no evidence provided for some of the claims made in the article; thus, readers should take these claims with a grain of salt until further evidence is presented.

# Topics for further research:

* Risks associated with erosion process in embankments
* Limitations of CFD-DEM coupling method
* Counterarguments to soil stress–strain relationships
* Impact of hydraulic gradients on erosion
* Experimental studies of embankment piping
* Numerical simulations of embankment piping

# Report location:

<https://www.fullpicture.app/item/2c8020bdc11947807a8eb293b57b4c3e>