



# Retraction Note: A hybrid DEM+SPH coupling method and its application in modeling water and mud inrush disasters

Cong Liu · Liping Li · Zongqing Zhou · Shaoshuai Shi · Zhihui Liu · Hao Wang

Accepted: 6 May 2023

© The Author(s), under exclusive licence to Springer Nature Switzerland AG 2023

**Retraction Note: Geomech. Geophys. Geo-energ. Geo-resour. (2022) 8:208**  
<https://doi.org/10.1007/s40948-022-00513-z>

This article has been retracted at the request of the corresponding author. The work reported in this article was performed when the corresponding author was a visiting scholar at CSIRO's Data61. The authors do not have permission to use the data in Table 1, Table 2, Fig. 8, Fig. 9 and Fig. 10. In addition, the simulation cases of water and mud inrush

disaster in the article were modelled through the DEM and SPH codes provided by CSIRO, but the use of these codes in the article has not been clearly indicated. All authors agree with this retraction.

**Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

The original article can be found online at <https://doi.org/10.1007/s40948-022-00513-z>.

C. Liu (✉) · L. Li · Z. Zhou · S. Shi · Z. Liu  
School of Qilu Transportation, Shandong University,  
Jinan 250002, China  
e-mail: liucong0215@163.com; cong.liu@sdu.edu.cn

C. Liu · L. Li · Z. Zhou · S. Shi  
Geotechnical and Structural Engineering Research Center,  
Shandong University, Qianfoshan Campus of Shandong  
University, No. 17923 Jingshi Road, Jinan 250061, China

H. Wang  
Shandong Hi-Speed Construction Management Co., LTD,  
Jinan 250000, China

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.