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Numerical simulation of scour around a submarine pipeline using computational fluid dynamics and discrete element method

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Highlights

- Numerical simulation of scour around a pipeline using a coupled CFD-DEM model.
- Simulated scour evolution are in good agreement with published experimental results.
- Detailed information, e.g. particle position, velocity, force, are obtained to improve understanding of scour mechanism.
- Particle motion and particle-particle interactions are found to be most intense during tunnel erosion stage.
- Both pressure gradient and drag forces are important at onset and early stage of scour, but drag is dominant at last stage.

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