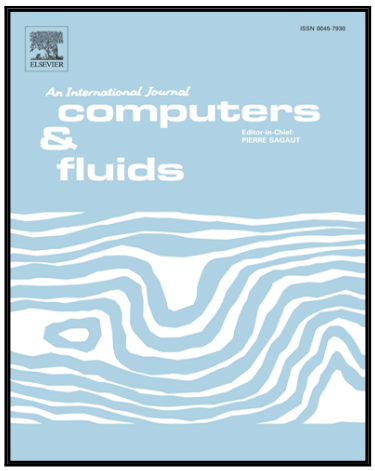

Freely Vibrating Circular Cylinder in the Vicinity of Fully Developed Scour Holes at Low Reynolds Numbers

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Highlights

- Role of fully-developed scour profile on VIV lock-in range and amplitudes
- Flow fields and force coefficients as a function of near-wall scour profiles
- Assessment of VIV dynamics of near-wall scour profiles against plane wall
- Comparison of the VIV amplitudes and forces between 3D and 2D
- Impact of streamwise vortical ribs on the force and response amplitudes
- Detailed 3D vortex shedding suppression mechanism with near-wall scouring