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Second Sub-Harmonic Resonance in Vortex-Induced Vibrations of a Marine Pipeline Close to the Seabed

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Abstract : In this paper, using the method of multiple scales, the second sub-harmonic resonance in vortex-induced vibrations (VIV) of a marine pipeline close to the seabed is investigated based on a developed wake oscillator model. The amplitude-frequency equations are also derived. It is found that the oscillation will increase all the time when both discriminants of the amplitude-frequency equations are positive while the oscillation will decay when the discriminants are negative.

Keywords : vortex-induced vibrations, marine pipeline, seabed, sub-harmonic resonance
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