15th INTERNATIONAL CONFERENCE
Dynamical Systems — Theory and Applications
December 2-5, 2019. Lodz, POLAND.

DSTA 2019

paper id: VIB204

Influence of bending and torsional flexibility on displacements and loading of risers

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Abstract: The paper presents the application of the finite segment method to analysis of coupled bending torsional vibrations of risers. The method is formulated by means of joint coordinates using multibody methods for kinematics and dynamics. The mathematical model and computer program enable us to analyse both free and forced vibrations of the riser in water. The forced vibrations may be caused by the motion of the base (vessel or platform). The model is validated by comparing frequencies of free vibrations calculated with authors' own models with the results presented by other researchers. The influence of sea currents on loads (also those which cause torsion) on a non-symmetrical riser is analysed.

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