

عنوان مقاله:

Nonlinear Surge Response of Tension Leg Platform under Wave Excitation

محل انتشار:

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خلاصه مقاله:

This paper presents the dynamic motion responses of a tension leg platform (TLP) in regular sea waves obtained by applying three methods in time domain using MATLAB soft ware. Surge equation of motion of TLP is highly nonlinear because of large displacement and it should be solved with large perturbation parameter in time domain. In this paper Homotopy perturbation technique (HPM) is used to solve highly nonlinear differential equation of surge motion. Also numerical method (MEM) is used for solving nonlinear equation of motion and ordinary differential equation (ODE) is used for linear equation of motion. Calculated responses by analytical HPM are compared with those obtained from both linear and nonlinear equation of motion. The platform was modelled as a rigid body restrained by mooring lines. Linear Airy wave theory and Morison equation were used for calculating the wave forces on the platform. The results were obtained as responses in surge are compared in time and frequency domain. Achieved values represent good accordance between results of HPM and numerical method

کلمات کلیدی:

tension leg platform, perturbation, Morison equation

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