



An impact of oil film on the surface wave

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The results of laboratory experiments on short gravity-capillary wave damping due to crude oil film (the thickness from 0.01 mm to bulk oil) are discussing. Numerical analysis of wave damping due to films of finite thickness was performed in the frame of the model of two fluid layers. The influence of physical parameters of films (volume, surface and interfacial viscosity, surface and interfacial tension and elasticity) on the wave damping and the relation between wave frequency and wavenumber values was analysed. The physical parameters of crude oil films were chosen when the best agreement between the laboratory experimental dependencies of the damping coefficient and wave number on film thickness and the calculated dependencies is achieved. The wind wave damping is theoretically estimated using these physical parameters and compared with data obtained in field experiments on the oil film remote sensing.

The work was supported by RFBR (Projects 08-05-00634, 07-05-00125), and INTAS (Projects BOW, MOPED, DEMOSSS).