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[PDF (1943K)] [References]

An experimental study on roll instability of high-speed boats

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Summary: Using two hard chine boat models, a torpedo boat with broad span and a passenger ferry with narrow span, fundamental data related to roll instability is obtained from static and dynamic inclining tests and roll tests in waves. The value of GM is confirmed to decrease when transversely inclined by hydrostatic calculation and inclining experiments in calm water and in steady flow. The broad spanned boat is obtained to be more advantageous at high speed. The wave analysis is conducted to get wave spectrum and wave pattern resistance for inclined hulls. At the same time wave pattern transverse force is calculated by Kotchin's formula. Furthermore wavelet transform is adapted to the wave analysis and the positions at which wave resistance and transverse force act are presumed. Wave test for inclined hull is conducted in order to simulate turning in wave. Roll amplitude increases in proportion to mean inclining angle. The transverse force acting in waves decreases the value of GM. With respect to roll at high speed the broad spanned boat is also more dvantageous.

[PDF (1943K)] [References]

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