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The Drift Force Acting on a Floating Body in Waves

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Summary: This paper proves Maruo's wave-drift-force and Newman's wave-drift-moment without using the momentum and energy conservation principles. Firstly a method to estimate the surface integral and to linearize the boundary conditions of a freely floating body in waves is proposed. Then Kashiwagi's 1st and 2nd reciprocity relations, i.e. the energy conservation law and the directivity of radiating wave amplitude at a far field respectively for an asymmetric body floating freely in waves proven by Kashiwagi recently, are introduced in three dimension without using Green's 2nd identity. Finally, a reciprocity relation for the drift force and moment is shown.