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## Analysis of Course Stability of a Towed Ship in Wind

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**Summary:** An analysis method is presented to know whether a towed ship is stable or not in the course stability in wind. The method is based on the linearized motion equations newly derived in this paper for the towed ship. The special feature is to take the effect of hull steady condition of the towed ship in wind into account. By means of the analysis method, the wind effects on the course stability of a towed barge were investigated. The course stability recovers in the range from beam to quartering wind even if the towed barge is unstable in no wind case. Namely, the barge is stably towed with keeping the certain heading/drift angle in the beam/quartering wind. On the contrary, the course stability reduces in head and following winds with higher speed even if the towed barge is stable. We found that the course stability of the towed ship is much affected by the hull steady condition in wind. The analysis results agreed well with the simulation results by a nonlinear time domain method. The present analysis method is useful for better understanding of the course stability of the towed ship in wind.

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