Aalto University
School of Engineering

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Manage oil spill risk for shipping in ice-covered Northern Baltic Sea

Title of the dissertation	Risk management of ship-source oil spill in ice conditions in the Northern Baltic Sea.
Contents of the dissertation	Polar and sub-polar regions are facing a trend of ice retreating and correspondingly increasing maritime traffic. Consequently, the probabilities of ship accidents and oil spills in ice conditions are likely to increase. Therefore, there is a need to carry out further studies on managing the relevant oil spill risk in ice conditions. The Northern Baltic Sea area, as one of the typical regions with large amount of shipping in ice conditions, is targeted as the study region in this thesis. The thesis contributes to the following four parts: i) developing a theoretical risk-based framework and method for guiding risk management for a system model; ii) establishing a holistic system model from ship accident to response and recovery, i.e. including ship-ship collision, oil outflow, oil drift and newly established response and recovery model in ice; iii) identifying critical factors in the system using the developed risk-based framework and method; and iv) providing risk control option on response aspect, i.e. a transit model and operability index for the response vessel for both independent and escort navigation operation modes.
Field of the dissertation	Mechanical Engineering/Marine Technology
Doctoral candidate	Liangliang Lu, M.Sc. (Tech.)
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