Station Keeping Criteria for Dynamically Positioned Vessels

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Abstract

The capability plot is often presented as a polar diagram with a number of envelops, depicting the ship's capability to keep position in a certain environment with a certain combination of thrusters.

The capability plot is often set against a scale of increasing wind speed with a fixed current speed and a fixed relation wind speed and wave height. Wind speed is often used as this is the most easily measured parameter. Wave height and current speed is more difficult as it will in most cases require equipment outside of the own ship.

The capability plot depicts for a certain heading, the vessels capability to withstand a certain wind speed coupled to a wave height and a current speed. Normally all three environmental forces are acting from the same direction.

In order to obtain the capability plot, various calculations are to be carried out like:

- Wind forces acting from various directions
- Wave drift forces acting from various directions
- Current drag forces acting from various directions
- Propeller, rudder and thruster efficiency in various directions based on hull interaction, propeller interaction, thruster interaction etc.

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