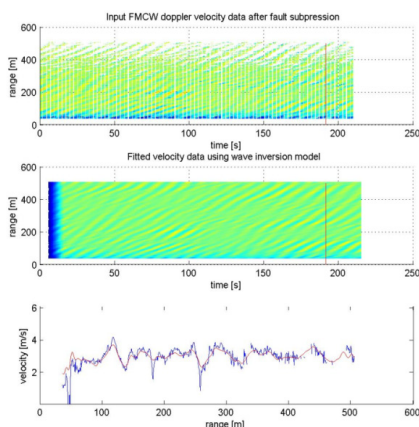


Do-It

High Speed Craft Ride Control with Remote Wave Sensing

Fast vessel performance in limiting sea conditions can be improved by anticipating peak accelerations. Auto Ride Control can be combined with motion prediction based on remote wave sensing by radar. Both technologies have recently been developed within research projects. Do-It will now combine and demonstrate the two technologies in a prototype system on a high speed craft in service conditions.



Measured orbital velocity profile



Small fast craft in limiting conditions

Remote wave sensing

Frequency modulated continuous wave radar (FMCW) captures the orbital velocities in the sea surface. With its high resolution in distance and time it allows for reconstruction of the wave surface ahead of a vessel. The incoming wave can thus be predicted to around ten seconds ahead in time. The technology was demonstrated in the recent Salute project and proved to match results from a wave buoy to inside around 5% accuracy. In Do-It the following tasks are addressed:

- marinise a solid state electronically swept beam radar unit (smaller, rugged, water proof)
- make radar data processing algorithms real time
- extend methods to higher sea states
- compensate for vessel motions

Motion predictions

A requirement for ride control is the reliable anticipation of events where motion criteria are exceeded. MARIN's FSSS model for fast (semi) planing vessels is adopted to simulate vessel response in a specified wave train.

In Do-It the following tasks are addressed:

- validate impact prediction capability
- motion prediction period once every 5 seconds
- increase computational performance by parallelisation
- configure for test vessel

Partners

- The project is organised by MARIN and is conducted in close co-operation with partners Radac, Damen Shipyards, NextOcean and within kind support by KNRM.

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Demonstration

The system will be developed and demonstrated on a fixed platform such as Scheveningen pier. Subsequently the system will be installed and demonstrated on a vessel in cooperation with Damen and KNRM.

Benefits

The following benefits are expected from Do-It:

- deterministic prediction of motion extremes as impacts and broaching
- improved operability in higher sea states by ride control assistance to vessel crews
- identification of limiting waves in the 200 m range in poor visibility (rain, fog, darkness)