HYDROELASTICITY
IN MARINE TECHNOLOGY

Edited by
Š. Malenica, N. Vladimir & I. Senjanović

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PREFACE

During the last three decades hydroelasticity has evolved from a theoretical concept to a mature science impacting all areas of marine technology. There are numerous practical problems/floating structures involving hydroelastic type of hydro-structure interactions:

- Wave induced global vibrations (Springing, Whipping, Ringing…)
- Local hydroelastic impacts (sloshing, slamming…)
- Line dynamics (risers, mooring lines, umbilicals…)
- Flow induced vibrations (VIV, Galloping, VIM…)
- Dynamics of Very Large Floating Structure
- Dynamics of aquaculture structures
- Renewable energy devices dynamic behavior (off shore wind turbines, marine current turbines, wave energy converters…)

... 

Compared to the more classical quasi static types of hydro-structure interactions where the hydrodynamic and structural problems can be considered separately, the hydroelastic modeling requires full dynamic coupling in between the hydrodynamic loading and the structural response. This implies much more complex numerical/experimental models and the competences from both sides (hydrodynamic and structure) need to be combined wisely.

The hydroelasticity can be investigated using three main research methods

- Numerical modeling
- Experimental modeling
- Full scale measurements

All three methods have their good and weak points, and none of them can be used exclusively so that strong interactions in between them are necessary to move forward in the understanding of this complex problem. In spite of all the progress made in the past, it is fair to say that still there is lot of modelling challenges remaining and significant effort should be made in order to fully master these phenomena.

Initiated in 1994 by few enthusiasts, the Hydroelasticity conference emerged as a major place for exchange of experience in between worldwide scientists, engineers and designers.

The 7th International Conference on Hydroelasticity in Marine Technology was organized jointly by Bureau Veritas and University of Zagreb and was held in Split (CROATIA) from 16th to 19th of September 2015.

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