Readme for *Datafile* with decay time series

Morten Kramer and Jacob Andersen, 2021-01-05

The present data folder contains supplementary material for the paper:

Highly Accurate Experimental Heave Decay Tests with a Floating Sphere: A Public Benchmark Dataset for Model Validation of Fluid–Structure Interaction

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The paper is open access, and available online at https://www.mdpi.com/journal/energies. The work has been carried out under the International Energy Agency Technology Collaboration Programme for Ocean Energy Systems (OES) by the OES Wave Energy Converters Modelling Verification and Validation working group, refer to https://www.ocean-energy-systems.org/oes-projects/wave-energy-converters-modelling-verification-and-validation/.

The benchmark dataset of the physical heave decay tests is publicly available from the supplementary material of the present paper. In addition, all numerical modelling blind tests of the test case are made available. Appendix A from the paper is repeated in this readme-file for convenience.

Appendix A

The supplementary material to the present paper is structured under the folder *Datafile* with subfolders *Descriptions*, *Experimental results*, and *Numerical results*; see Figure A1. The folder *Descriptions* includes technical descriptions of the sphere model and the test setup (referred to in Sections 1 and 2). The folders *Experimental results* and *Numerical results* contain the results from the heave decay tests performed physically and numerically, respectively. Eleven numerical modelling approaches were performed on the test case, and thus eleven subdirectories are located under *Numerical*

results; see Figure A1. For further information on the specifications of the numerical models, refer to Appendix B.

The results are given as text-files with columns containing time t [s] and heave x_3 [m]; see Figure A2. The three columns $WG1$, $WG2$, and $WG3$ [m] contain the surface elevation time series at three wave gauges locations, introduced in Section 2.2, and are included for the experimental results and for certain numerical results. Four repetitions were performed of the physical heave decay tests, all of which are included in the result files under *Experimental results*. The heave decay time series are presented in a raw and in a normalized format, as explained in Section 3. The normalized results are also represented in a file containing the sample mean and the upper and lower bounds of the 95% CI around the sample mean; see Section 3.
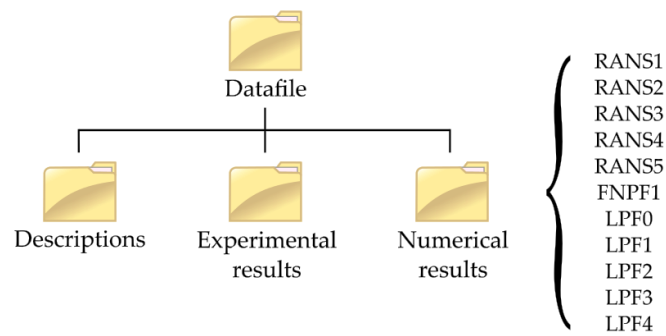

Figure A1. Directory structure of the supplementary material.

(**a**)

(**b**)

Figure A2. Structure of result files. Example with first part of raw measurements (a) and mean of normalized data with 95% CI (b).