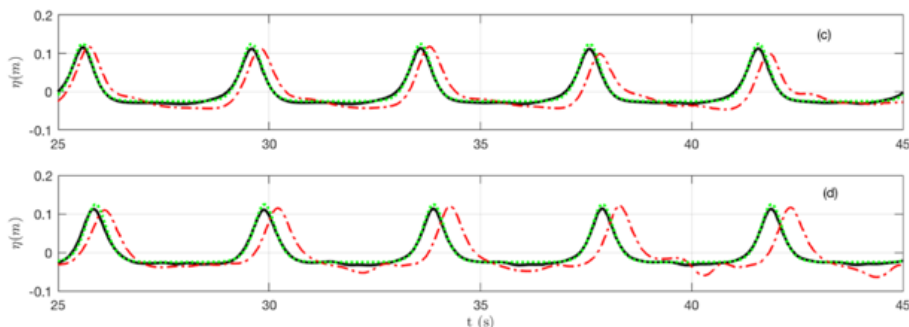


IHCantabria releases a new IHFOAM-GUI

Santander, September 19th.-

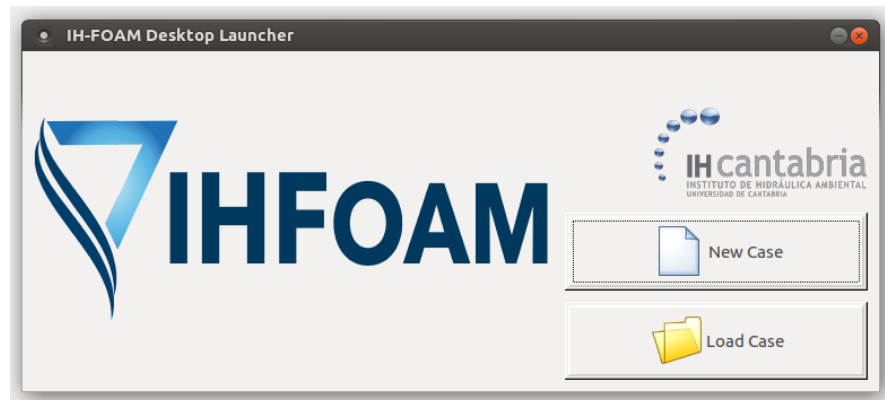
In the last decade, IHCantabria has been working actively on the development of CFD tools to study the interaction of waves with marine structures. In the last five years, our efforts have been focus on the implementation of new physics on OpenFOAM® platform to increase the capability of OpenFOAM® in solving coastal engineering problems. A set of boundary conditions for wave generation and absorption, and new solvers, to simulate two-phase porous media flow which were released in 2014 to make it freely accessible to the scientific community and industry. **That bundle is called IHFOAM and it has been updated and actively downloaded from www.ihfoam.ihcantabria.com.**

In 2016, IHCantabria reached an agreement with ESI Group to include the IHFOAM developments in OpenFOAM® releases, which are presented every six months.



Free surface time history of a cnoidal wave. Dashed red line: IHFOAM (release 2014). Dotted green line: Theoretical solution. Black solid line: IHFOAM (OpenFOAM® release 17.06).

Since then, IHCantabria has contributed to releases v1612+ and v1706, presented in December 2016 and June 2017, respectively. Both releases included a new set of boundary conditions to generate and absorb waves at the boundaries without the use of dissipation areas to damp wave energy. This new set of boundary conditions, which are formulated using a new concept based on the introduction of mass and momentum along the boundaries, improves the ones initially develop by IHCantabria in 2014 and working with OpenCFD developers reduces the computational cost by around a 30%. In addition, the catalogue of wave theories has been increased covering solitary waves, linear and non-linear regular waves and random multidirectional waves. Wave absorption has also been improved since the original release.



Now, we are very proud to announce here the release of IHFOAM-GUI which contains IHFOAM developments during the last years and already included in release v1706. Additionally other physics not included in v1706 release are incorporated in the GUI, such as porous media flow (fully validated, published in four papers) and vegetation fields, (fully validated, published in two papers).

IHFOAM-GUI has been designed following the request of many IHFOAM users to decrease the learning curve in the use of OpenFOAM® for coastal and ocean engineering. It is more than a standard OpenFOAM® GUI since it is especially designed to deal with free surface flows. The user will be able to set-up, in a short time, a numerical wave tank to analyze the interaction of waves with coastal and offshore structures. IHFOAM-GUI builds up the folders and the files needed to set-up a case guiding the user along several menus. Additionally, numerical probes can be inserted and post-processed along the GUI menu.

IHFOAM-GUI is freely downloadable from the following link including a tutorial:

<http://ihfoam.ihcantabria.com/model/gui/>

IHFOAM-GUI has been designed within the **Coastal Hydrodynamics and Infrastructures Group** in IHCantabria comprised by ten members. Future IHFOAM developments will be included in OpenFOAM® to be released by ESI Group and included in IHFOAM-GUI.

IHCantabria developments has passed along a thorough validation with existing or tailored designed laboratory tests. **Validation results are published in peer reviewed journals. Visit our web page for further details.**

We look forward to having feedback from you.

Best regards,

IHFOAM Team

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About IHCantabria

The University of Cantabria, located in Santander in the north coast of Spain, is one of the three universities that has been in the Top 10 list of the main Spanish rankings both in education and research quality. **IHCantabria**, one of its centres, is the leading research centre in coastal and ocean engineering in the country, with more than 140 researchers and scientists focused on a wide range engineering challenges. It also manages a unique set of experimental facilities specialized on ocean engineering issues. The University of Cantabria, and the research practiced in **IHCantabria**, are the sixth in the world University ranking of Shanghai and world leader in the CNCI indicator (Category Normalized Citation Impact).