

# Journées de Modélisation des Vagues à Phases Résolues

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José Daniel Galaz Mora - *INRIA Montpellier*

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**Titre:** Stable coupling of Nwogu's and shallow water equations.

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**Résumé:** In 2009, Toneli and Petti introduced a "hybrid" wave breaking model in which, instead of adding source terms to include wave-breaking effects, the equations are degraded from a dispersive higher-order asymptotic model to the hyperbolic shallow water equations. This approach has been widely adopted, probably due to its simple implementation, and it has also been validated on numerous benchmarks. However, oscillations have been observed and even instabilities have been reported, for example in the report by Kazolea & Ricchiuto in 2019. In this presentation we will study Nwogu's weakly nonlinear weakly dispersive model coupled with the nonlinear shallow water equations through a static interface and discuss about the source of the oscillations and some approaches to stabilize the system.