Modeling and Analysis of a Sandy Beach Model

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Abstract :

The objective of this work is to study and propose solutions for the problems of coastline retreat. This phenomenon is accentuated by climate change and is a challenge for coastal areas.
In this talk, we propose a model to simulate the interaction between free surface flows and groundwater flows.
The derived equations give rise to a coupling between the Saint-Venant equations (hyperbolic problem) and the Richards equation (degenerate parabolic problem). Numerical solution of this model remains challenging to get a robust, accurate and cost-effective results, particularly for moving sharp wetting fronts, drying, flooding, etc.
An hp-adaptative method based on DG method is proposed for which a convergence result is presented. We end by the presentation of numerical simulations.