

<p align="center">Proposition de thèse de doctorat</p> <p align="center">Début : 2017-2018</p> <p>Titre de la thèse : Development and application of the SPH method to ditching situations</p> <p>Laboratoire : LHEEA</p> <p>Equipe : H2I</p> <p>Localisation de la thèse : Ecole Centrale de Nantes</p>	
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<p><u>Description du sujet</u></p> <p>The PhD thesis has for objective the application of the SPH (Smoothed Particle Hydrodynamics) method, developed since 1999 in the research group (SPH-flow software), to study ditching of aircrafts (airplanes/helicopters). It belongs to the H2020 European project SARAH, gathering academic researchers and R&D engineers from aeronautic industries (e.g., Airbus). Co-funding by the French Region Pays de la Loire is also seeked.</p> <p>The first stage of the PhD thesis will be to extend SPH models to accurately predict two-phase flows in the ditching context (especially ventilation). The SPH method will then be coupled to standard mesh-based finite-volume solvers to restrict its use to areas of the flow for which it is best suited (impact, complex free-surface...). Finally, fluid-structure interaction of the problem will be studied thanks to an existing coupling between SPH and FE structural solver to predict aircraft deformation during ditching events.</p> <p>These developments will be validated on academic test cases and in comparison to experiments carried out in the oceanic wave tank of ECN in the frame of the project.</p>

Compétences requises
Master in Fluid Mechanics and/or Applied Maths

Commentaires Supplémentaires
<p>Etude en relation : H2020 project SARAH</p> <p>Financement prévu : H2020 / Région PdL</p> <p>Indemnité : Oui (pour les étudiants non déjà boursiers)</p> <p>Montant net mensuel envisagé :</p>