

Title: Coupling physics-based and data-driven models for the simulation of fluid/structure interaction: an application to tire hydroplaning modelling

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Abstract: In a world of tire manufacturing becoming more and more competitive, modelling and simulation are major solutions to improve our product design at Michelin. In the R&D department, numerical simulation tools are developed and used daily to better understand and improve the performance of our future products. If numerical tools are of paramount importance to help decision making, high computational and implementation costs can slow down the virtual design process.

To accelerate the time-to-market of our product, a possible trade-off solution is to take advantage of existing physics-based simulation databases to build data-driven Reduced-Order-Models (ROMs). These simplified approximation models can then be used during the design process to quickly explore the solution space.

This talk will be focused on some recent studies aiming at coupling physics-based and data-driven ROMs for the simulation of tire/water interaction in the context of tire hydroplaning modelling.