On the selection of constitutive models for realistic numerical simulations

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***Abstract* — Nowadays, the automobile and aeronautics industries are of high demand for quality and efficiency. The products and components development must be precise and with no delays. Therefore, the virtualization of these processes by means of numerical simulations is essentially used. Yet, realistic simulations are crucial for the correct development of the projects. For such, it is required an adequate constitutive model and accurately calibrated material parameters. Several material constitutive models have been proposed and experimentally validated to characterize the numerical material behavior** [1]–[3]**. However, its selection is a tough and laboured task that requires specified knowledge which usually is not observed in the simulation software users in the industry. Generally, in the scientific community, the model selection strategy is based on brute force and the comparison of numerical and experimental data** [4]–[6]**. This is an exhaustive and non-robust approach. An automatic tool for the constitutive model selection is necessary to solve these problems.**

Keywords— Constitutive models; Material macroscopic behavior; Finite Element Analysis (FEA); Selection tool.

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TOPIC

"1) a.: Sustainable Manufacturing Solutions – Manufacturing Processes & Simulation"

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