MUESLI: a Material UnivErSal LIbrary

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ABSTRACT

Simulation codes in Computational Mechanics employ libraries of materials that model their constitutive response. At the same time, many researchers and code developers in this discipline continue to implement their own advanced material models. However, to the best of the authors' knowledge, there is no way to access this body of knowledge and accumulated experience since computer implementations of material models are not shared. Muesli, a Material UnivErSal LIbrary, is an open source library created to alleviate this situation, simplifying the development and implementation of material models, and their interface with larger research and comercial computational codes.

Muesli has several features that make it appealing for users and developers in Computational Mechanics:

- Programmed in high-level C++, it defines vector and tensors classes that are later employed to simplify and speed up as much as possible the formulation of new materials.

- The library is structured in material families, each of them possessing a clear interface and automatic checking capabilities that verify, to a certain extent, the correctness of the implementation.

- The library already includes the most commonly employed material models for small strain and finite strain solids, thermal analysis, and simple fluids.

- The library has interfaces to two commercial codes, and more will be developed, so that exactly the same code can be re-used in research and commercial programs.

- It can be freely obtained from `http://www.materials.imdea.org/Muesli`

In the poster we will present the main features of the library and the potential advantages for those who decide to include it in their projects.