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Towards optimal numerics for the simulation of boundary-layer flows MANUEL SCHMID, University of British Columbia, MARCO GIOMETTO, Columbia University, MARC PARLANGE, Monash University — Due to the strict performance requirements, turbulence-resolving flow simulations are usually implemented in Fortran or C++. In these highly optimized codes, it can be challenging to explore the impact of modeling decisions such as the choice of numerical methods. The Julia programming language has been developed specifically for scientific computation, with a focus on providing high flexibility without sacrificing performance. We present a Julia code for direct numerical simulation as well as large-eddy simulation of turbulent channel flows and use it to explore the impact of modeling decisions such as the choice of time-integration scheme and the dealiasing of non-linear terms.

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