

Abstract Submitted  
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**On the use of traction outlet boundary conditions for turbulent multiphase flows**<sup>1</sup> CYRIL BOZONNET, Grenoble Alpes University, OLIVIER DESJARDINS, Cornell University, GUILLAUME BALARAC, Grenoble Institute of Technology — Due to the finite nature of numerical simulations, computational domains need to be truncated and artificial boundary conditions need to be introduced to close the system of equations being solved. In the context of turbulent multiphase flows, this artificial boundary may lead to the development of unstable backflow patterns in outflow regions and can be the source of wave reflection. Moreover, if the flow is incompressible, the position of the artificial boundary can durably impact the upstream flow. The stabilized traction-free boundary condition has already been introduced in order to mitigate backflow instabilities. In this talk, we will present the improvements that can be obtained by using a non-zero traction boundary condition. Specifically, error level, effect of domain truncation, and surface wave reflection are analyzed. This novel outlet boundary treatment is presented in the context of pressure projection algorithms and interface capturing methods.

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