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Fabulous, flowing, and folding fountain of chocolate

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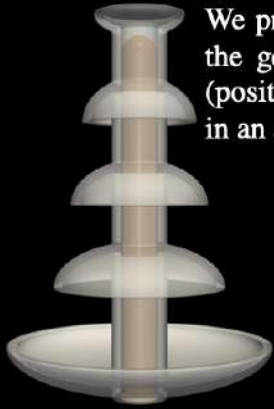
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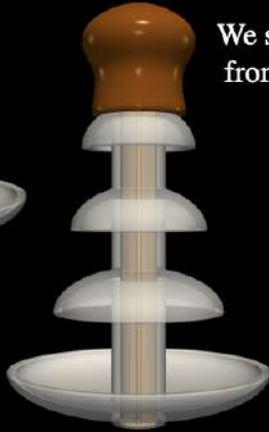
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Fabulous, flowing, and folding fountain of chocolate

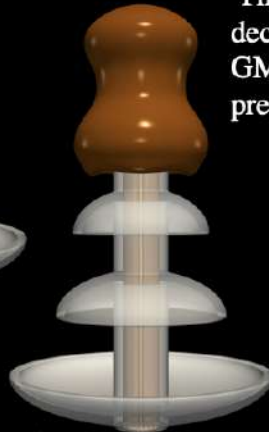
L. Kahouadji, S. Shin, J. Chergui, D. Juric, R. V. Craster, and O. K. Matar



We present a three-dimensional direct numerical simulation of a heated chocolate fountain flow where the geometrical structure is built from primitive geometrical objects using a state distance function (positive for fluid and negative for solid). We use physical properties of melted chocolate (40C) flowing in an ambient atmosphere (20C).



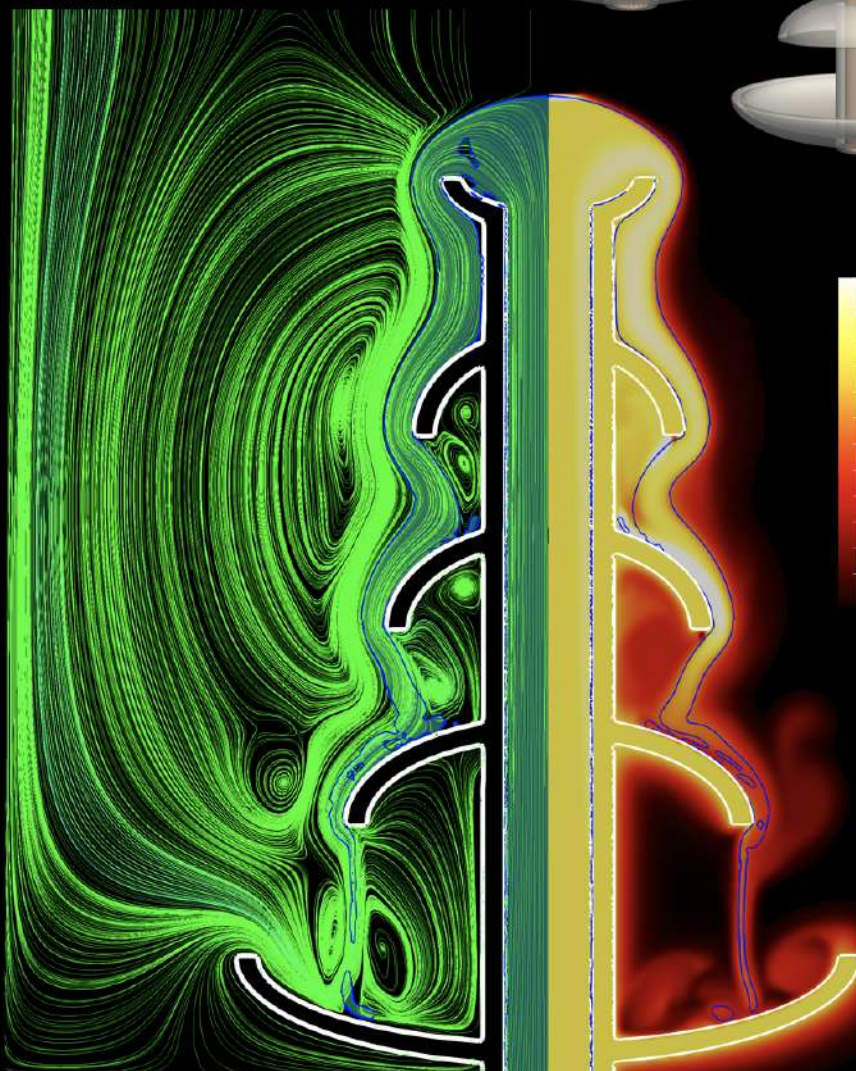
We solve both the Navier-Stokes and the thermal energy equation in the context of a front-tracking based multiphase method and fluid structure interaction.



The parallelization of the code is based on algebraic domain decomposition where the velocity field is solved by a parallel GMRES method for the implicit viscous terms and the pressure by a parallel multigrain method.



The communication across process threads is handled by MPI message-passing procedures.



3.2e+02
316
314
312
310
308
306
304
302
300
298
296
2.9e+02

Temperature (K)



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