Numerical simulation of compressible flow in time-dependent domain with the motivation by the airflow in human vocal folds

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The contribution is concerned with compressible flow in a time-dependent domain with applications to the airflow in human vocal folds. The mathematical model of this problem is represented by the compressible Navier-Stokes equations or the compressible Euler equations. For the treatment of the time-dependent domain the Arbitrary Lagrangian-Eulerian (ALE) method is used. The governing equations are written in the ALE formulation and discretized in space by the discontinuous Galerkin finite element method. The time discretization is carried out by a linearized semi-implicit unconditionally stable method. Some results of our computations in a domain with the shape of human vocal folds will be presented.

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