

This work deals with the problem of inviscid, compressible flow in a time-dependent domain. We describe mathematical properties of the Euler equations and the system of governing equations is solved with the aid of the discontinuous Galerkin finite element method (DGFEM) in the time-independent domain. The main aim of this work is the study of this problem in time-dependent domains. For this reason the Arbitrary Lagrangian-Eulerian (ALE) method is presented. The governing equations are formulated in the ALE formulation and discretized in space and time by the DGFEM. Shortly we mention the shock capturing of the obtained scheme and the solution of the resulting linear system with the aid of Generalized Minimal Residual (GMRES) method. At the end of this work we present and compare results obtained by two different ALE formulations of the governing equations in the rectangular domain with a moving part of lower wall.