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Title: Discontinuous Galerkin method on curved boundary domains

Abstract: The treatment of boundary value problems in curved domains has been a topic of increasing interest during the last decades in the numerical analysis community. It is well known that the treatment of curved domains with polygonal meshes can lead to a drastic reduction in the order of convergence, especially for very high order precision schemes. To overcome this problem, we propose a polynomial reconstruction technique in the context of the discontinuous Galerkin method that takes into account real boundary conditions (which are not in the polygonal computational domain). This method does not require the generation of curved meshes to adjust the boundary nor complex nonlinear transformations, which contributes to a high computational efficiency and simplifies the numerical schemes. Numerical results indicate that this method is promising in allowing achieving high order accuracy in domains with curved boundaries.