Title: **Discontinuous Finite Volume Element Method for Parabolic Problems**

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Discontinuous Galerkin methods have some appealing features such as their applicability to irregular non-matching grids and being ideally suited for numerical schemes in which the degree of the polynomials can be changed adaptively (*hp*-method). This features are convenient for its application in combination with Finite Volume discretization techniques.

In this article, the authors consider the semi-discrete and the backward Euler fully discrete discontinuous finite volume element method for the second order parabolic problem. This work follows on earlier applications of the methodology to elliptic and Stokes problem by W. Ye[1,2].

Optimal order error estimates in a mesh dependant and L^2 norms are derived for both, the semi-discrete and fully discrete methods.

References:

1. Ye, X. *A New Discontinuous Finite Volume Method for Elliptic Problems*, SIAM J. Numer. Anal. **42, 3** 1062–1072, (2004)

2. Ye, X. *A Discontinuous Finite Volume Method for the Stokes Problems*, SIAM J. Numer. Anal. **44,1** 183–198 (2006)

See also:

1. Michev I. D., *Finite Volume And Finite Volume Element Methods For Nonsymmetric Problems*, Ph.D. Dissertation, Texas A&M University, 1996, available online at:
`http://www.isc.tamu.edu/publications-reports/tr/9604.pdf`