

**DISCONTINUOUS GALERKIN METHODS
FOR MODELING FLOW AND REACTIVE TRANSPORT**

Shuyu Sun^a and Mary F. Wheeler^b

^aThe Center for Subsurface Modeling (CSM)
The Institute for Computational Engineering and Sciences (ICES)
The University of Texas, Austin, TX 78712, USA
shuyu@ices.utexas.edu

^bThe Center for Subsurface Modeling (CSM)
The Institute for Computational Engineering and Sciences (ICES)
The University of Texas, Austin, TX 78712, USA
mfw@ices.utexas.edu

In this presentation, we consider several primal formulations of discontinuous Galerkin methods for modeling flow and reactive transport in porous media which include Baumann-Oden-Babuska, the symmetric and nonsymmetric interior penalty methods, SIPG, NIPG, and the incomplete interior penalty method IIPG recently introduced by Sun and Wheeler. Error estimates and estimators for adaptivity as well as computational results are provided and discussed.