Dongwoo Sheen* (dongwoosheen@gmail.com), Department of Mathematics, Texas A&M University, College Station, TX 77843-3368. *Stable cheapest nonconforming finite element methods for the Stokes equations.

We will begin by a short review on the recent development in nonconforming finite elements on rectangular/quadrilateral/hexahedral domains. These elements can be applied to approximate the velocity field of Stokes equations with the piecewise constant element to approximate pressure field. We examine the discrete inf-sup condition for these elements. Finally, we introduce a stable cheapest finite element pair for solving the Stokes equations.

The results presented in this talk have been obtained by several collaborators: Chunjae Park (Konkuk Univ.), Byeongchun Shin (Chonnam National Univ), Youngmok Jeon (Ajou Univ.), Kwanshin Shim (ADD, Korea), Hyun Nam (KIAPS, Korea), Hyeongjun Choi (POSTECH). In particular, the last part of this talk is extracted from a joint work with Sihwan Kim and Jaeryun Yim of Seoul National University. (Received February 10, 2014)