

**FACULTY OF SCIENCE MATHEMATICS
DEPARTMENT
FALL 2009 SEMINARS**

SEMINAR VI

By Onur BAYSAL

**Link-Cutting Bubbles for the Stabilization of 1D
Convection-Diffusion-Reaction Equations**

Abstract

It is known that the addition and elimination of suitable bubble functions can result in a stabilized scheme of the SUPG-type. Residual Free Bubbles(RFB), in particular, can provide stabilized scheme but they are difficult to compute in one dimension and nearly impossible to compute in 2 and 3 dimensions unless in special limit cases (for example pure convection-diffusion equation). Here although in a one dimensional framework, we talk about analyzing the case in which a non-negligible reaction term is contained and we give a simple recipe for describing a suitable bubble space (adding 2 bubbles per element). This technic provides a very good stabilizing effect and it adapts very well to all regimes with continuous transitions from one regime to another.

DATE : December, 12, 2009

TIME : 15:45-16:45

PLACE : Science Faculty Room 223