Mathematics, Statistics, and Computer Science **@ UIC**

Analysis and Applied Mathematics Seminar

Analysis and computations of convection dominated flows in the presence of a boundary

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Abstract: In this talk, I will present convergence results of singularly perturbed problems in the sense of PDEs, which is related to the vanishing viscosity limit. I also provide as well approximation schemes, error estimates and numerical simulations. To resolve the oscillations of classical numerical solutions due to the stiffness of our problem, we construct, via boundary layer analysis, the so-called boundary layer elements which absorb the boundary layer singularities. Using a P1 classical finite element space enriched with the boundary layer elements, we obtain an accurate numerical scheme in a quasi-uniform mesh.

Monday, November 2 at 4:00 PM in SEO 636