

# STABILIZED FINITE ELEMENT SIMULATIONS FOR BURGERS'-TYPE EQUATIONS

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**Abstract:** In this talk, we are dealing with the numerical solutions to Burgers' type partial differential equations at high Reynolds numbers. The governing equations become more convection-dominated as the Reynolds numbers increase, resulting in spurious oscillations in the solutions obtained by using standard numerical methods. The streamline-upwind/Petrov-Galerkin method is used to stabilize the standard Galerkin finite element formulation to overcome this challenge. Additionally, the stabilized formulation is supplemented with the  $YZ\beta$  shock-capturing to achieve better solution profiles around sharp gradients.

**Keywords:** Burgers' equation; High Reynolds number; Finite elements; SUPG;  $YZ\beta$  shock-capturing