

1144-65-61

**Thai Anh Nhan\*** ([nhan@hnu.edu](mailto:nhan@hnu.edu)), Math and Sciences, Holy Names University, 3500 Mountain Blvd., Oakland, CA 94619, and **Relja Vulanovic** ([rvulanov@kent.edu](mailto:rvulanov@kent.edu)), Department of Mathematical Sciences, Kent State University, North Canton, OH 44720. *Analysis of the truncation error and barrier-function technique for a Bakhvalov-type mesh.*

In this talk, we prove the parameter-uniform convergence for a linear singularly perturbed convection-diffusion problem in one dimension,

$$\mathcal{L}u := -\varepsilon u'' - b(x)u' + c(x)u = f(x), \quad x \in (0, 1), \quad u(0) = u(1) = 0,$$

where  $\varepsilon$  is a small positive perturbation parameter, discretized by a finite-difference scheme on a Bakhvalov-type mesh by means of the truncation error and barrier-function approach. To our knowledge, this is the first analysis of this kind in the research literature. Numerical experiments are illustrated to support our theoretical findings. (Received August 09, 2018)