Finite Element Method for the Generalized Burgers-Huxley Equation with Memory

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In this talk, we will address the analysis and the numerical approximation of the 2, 3-dimensional generalized Burgers-Huxley equation with memory (a non-linear advection-diffusion-reaction problem). Firstly, the existence of a unique solution to the continuous problem have been obtained using the Faedo-Galerkin approximation method. Under smoothness assumptions on the initial data and the external forcing, we will derive further regularity results of the weak solution. Secondly, for the numerical studies, we propose a conforming finite element method for its numerical approximation using backward Euler discretization in time. Further, A prior error estimate for the approximation is also derived. Finally, the computational results are presented to support the derived theoretical results.

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