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A POSITIVITY PRESERVING NONLINEAR LPS METHOD FOR CONVECTION-DIFFUSION EQUATION

Gabriel Barrenechea[1], Erik Burman[2] and Fotini Karakatsani[3]

[1] Department of Mathematics and Statistics, University of Strathclyde, 26 Richmond Street, Glasgow G1 1XH, Scotland. gabriel.barrenechea@strath.ac.uk.
http://www.strath.ac.uk/mathstat/staff/drgabrielbarrenechea/

[2] Department of Mathematics, University College London, Gower Street, London, WC1E 6BT, e.burman@ucl.ac.uk

[3] Department of Mathematics and Statistics, University of Strathclyde, 26 Richmond Street, Glasgow G1 1XH, Scotland. foteini.karakatsani@strath.ac.uk.
http://www.strath.ac.uk/mathstat/staff/drfoteinikarakatsani/

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In this work a nonlinear stabilization method is proposed for solving a convection-dominated convection-diffusion equation. The aforementioned method is achieved by combining appropriately a linear artificial viscosity method with a local projection stabilization method (LPS), [3]. The stabilization parameters of the proposed method are chosen such that its linear artificial viscosity part satisfies the discrete maximum principle [2] and the LPS part is of optimal order [1]. Numerical experiments, which demonstrate the behavior of the new method, are also presented.

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