

On the discrete maximum principle for local projection scheme

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It is a well known fact that discrete solutions of stabilised convection dominated problems can exhibit spurious oscillations at layers. One way to overcome this lack is to construct schemes which satisfy a discrete maximum principle. For piecewise linear elements on simplices there are monotone methods using upwinding techniques or artificial diffusion. For continuous interior penalty and streamline diffusion methods Burman has recently proposed and analysed monotone schemes with semilinear shock capturing operator acting on gradient jumps. In order to satisfy a discrete maximum principle for the local projection scheme, we create new operator since the finite element space is extended. We discuss new stabilisation methods and give some numerical examples.