6100 Main St,
Houston, TX 77005

January 3, 2017

Dr. Hans De Sterck
SIAM J. Sci. Comp. Section Editor
Methods and Algorithms for Scientific Computing

Dear Dr. Hans De Sterck

Please find enclosed the manuscript,

Jesse Chan
Weight adjusted discontinuous Galerkin methods: matrix-valued weights and elastic wave propagation in heterogeneous media,

which we would like to submit for publication as an original research article in the SIAM Journal on Scientific Computing. This work extends weight-adjusted inner products, which provide a low-storage approximation of the inverse of a mass matrix with respect to an L^2 inner product with a spatially varying weight, to the case of spatially varying matrix-valued weights. These approximations are then applied to the simulation of elastic wave propagation in arbitrary heterogeneous media, including anisotropy and media with sub-element variations. We also introduce a new discontinuous Galerkin method which simplifies numerical fluxes while retaining energy stability and high order accuracy.

We hope that the method and results discussed in this manuscript will appeal to the readership of SIAM Journal on Scientific Computing. We confirm that this manuscript has not been published elsewhere and is not under consideration by another journal. We look forward to hearing from you at your earliest convenience.

Best regards

Jesse Chan