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Yuan Liu* (yl686@msstate.edu), **Yingda Cheng** and **Chi-Wang Shu**. *A simple bound-preserving sweeping technique for conservative numerical approximations.*

In this talk, we introduce a simple bound-preserving sweeping procedure for conservative numerical approximations. Conservative schemes are of importance in many applications, yet for high order methods, the numerical solutions do not necessarily satisfy maximum principle. This paper constructs a simple sweeping algorithm to enforce the bound of the solutions. It has a very general framework acting as a postprocessing step accommodating many point-based or cell average-based discretizations. The method is proven to preserve the bounds of the numerical solution while conserving a prescribed quantity designated as a weighted average of values from all points. The technique is demonstrated to work well with a spectral method, high order finite difference and finite volume methods for scalar conservation laws and incompressible flows. Extensive numerical tests in 1D and 2D are provided to verify the accuracy of the sweeping procedure. (Received September 15, 2016)