1145-65-156   **Leo Rebholz**, **Alex Viguerie** and **Mengying Xiao*** (`mxiao01@wm.edu`). *Analysis of Algebraic Chorin Temam splitting for incompressible Navier-Stokes equations.*

Algebraic splitting methods are a common approach to solving the saddle point linear systems that arise at each time step of an incompressible flow simulation. There are two main classes of these methods, those of Yosida-type and those of Algebraic Chorin Temam (ACT)-type, with the Yosida-type methods being predominantly used in practice. We show herein, through new analysis and extensive numerical testing, that ACT-type methods that include the viscous term stiffness matrix in the modified A-block, that ACT methods are unconditionally stable and can be superior to Yosida-type methods in a range of problems, and therefore should be given consideration as a solver. Particular situations where the ACT-type solvers are advantageous are problems where numerical stability is a concern, as well as problems where strong enforcement of the divergence constraint is important. (Received August 12, 2018)