# Highly efficient energy stable schemes for dissipative systems and a new fully decoupled scheme with uniform second-order accuracy for Navier-Stokes equations

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I will present some recent advances on using the generalized scalar auxiliary variable (GSAV) approach to develop highly efficient and accurate schemes for a large class of complex dissipative systems, including in particular the Navier-Stokes equations. By combining the GSAV approach with a new consistent splitting scheme, we construct, for the very first time, a unconditionally stable (in $H^1$ norm) and totally decoupled scheme with uniform second-order accuracy for the velocity and pressure, and provide a rigorous optimal error estimate. We shall also present ample numerical results to show the computational advantages of higher-order SAV schemes.