A new class of velocity-correction schemes for the incompressible Navier-Stokes equations

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We'll introduce a new class of velocity-correction projection schemes in the standard form and in rotational form. We will show that the velocity-correction schemes lead to slightly better error estimates compared with the usual pressure-correction schemes, but more importantly, the high-order versions of the velocity-correction schemes in rotational form are stable. Furthermore, we will show that the splitting-up schemes proposed by Orszag, Israeli & Deville (1986) and Kaniadakis, Israeli & Orszag (1991) can be recast as a velocity-correction scheme in rotational form. We will aso present some numerical simulations of 3-D rotating flows.