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Leo G Rebholz* (rebholz@clemson.edu) and **Alexander Linke**. *Recent results on discrete mass conservation in finite element methods for incompressible flow*. Preliminary report.

This talk will discuss recent results for Scott-Vogelius mixed finite elements for Navier-Stokes and related problems, grad-div stabilization, connections between SV and grad-div stabilized Taylor-Hood elements, connection to the classical penalty method, and finally we will show a criteria for flow problems which indicates when strong enforcement of discrete mass conservation is critical. (Received December 19, 2011)