1016-35-73 **D. H. Sattinger*** (david.sattinger@yale.edu), Department of Mathematics, Yale University, New Haven, CT 06520, and **Boris Kolev** (bkolev@wanadoo.fr), C.M.I. Universite de Provence, Marseille, France. *Friedrichs Meets Zakharov.*

The variational principles of K.O. Friedrichs and V.E. Zakharov for free boundary flows of viscous incompressible flows are compared. Zakharov's principle uses the velocity potential, and yields Euler's equations for a free surface; whereas Friedrichs' principle uses the stream function and does not yield Bernoulli's equation on the free surface. Bernoulli's equation is obtained using a constrained variational problem for the stream function, as was done in a recent (J.F.M.) paper of Constantin, Sattinger, and Strauss. (Received February 01, 2006)