1063-76-251   **James P Kelliher*** (`kelliher@math.ucr.edu`), University of California Riverside, 900 University Ave., Surge 202, Riverside, CA 92521. *An inverse problem associated with flow maps.*

It is classical that given a vector field whose modulus of continuity (MOC), μ, satisfies the Osgood condition there exists a unique flow map with an explicit bound, Γ_t, on its MOC at time $t \geq 0$. We examine the inverse problem: given a MOC, f, find a MOC, μ, such that $f = \Gamma_1$. For many applications, linear or nonlinear, both μ and Γ_t are naturally constrained to be concave functions. We show that under such constraints the inverse problem is equivalent to an open problem in the theory of iterative functional equations. Our motivation for studying this inverse problem is to try to construct an initial velocity field for which the associated flow for a solution to the Euler equations has an arbitrarily poor MOC. (Received August 17, 2010)