1040-35-85 **Maria E Schonbek*** (schonbek@math.ucsc.edu), UCSC, Math Department, 1156 High Street, Santa Cruz, CA 95060. *Polymer equations, decay and existence.*

I will describe the existence and decay of solutions to kinetic models of incompressible polymeric flow. The main model that I will consider are dumbbell type models in the case when the drag term is corotational and weak solutions are constructed via a Leray-type approximation. I will discuss the decay when the space of elongations is bounded, and the spatial domain of the polymer is either a bounded domain $\Omega \subset R^n, \quad n = 2, 3$ or it is the whole space $R^n, \quad n = 2, 3$. The decay is first established for the L^2 norm of the probability density function ψ and then this decay is used to obtain L^2-decay of the velocity field u. I will also consider solutions where the probability density function is radial in the admissible elongation vectors q. In this case, the velocity field u becomes a solution to the incompressible Navier–Stokes equations, and thus decay follows from known results for the Navier–Stokes equations. (Received January 25, 2008)