1063-35-103 **Felix Otto**, **Christian Seis** and **Dejan Slepcev*** (slepcev@math.cmu.edu), Department of Mathematical Sciences, Carnegie Mellon University, Pittsburgh, PA 15217. *Crossover in the coarsening rates in demixing of binary viscous fluids.*

When a binary fluid mixture is quenched, two domains of two different equilibrium volume fractions form. The phases are divided by a characteristic interfacial layer. The dynamics is driven by the energy which concentrates along the interfacial layer. The area of the interfacial layer decreases with time by material transport from higher-curvature regions to lower-curvature regions. As the time progresses the configuration coarsens and the length scale, $L$, characterizing the interfacial pattern grows.

There are two parallel transport mechanisms. Material can be transported by diffusion, the relative motion of the two different species, through the bulk or by convection, the transport by the bulk flow. It turns out that each transport mechanism becomes dominant during certain time interval in the demixing process.

We will discuss how which mechanism dominates affects the rate of coarsening. In particular we will discuss how one can rigorously establish coarsening rates in form of weak upper bounds: the coarsening cannot proceed faster than $L \lesssim t^{1/3}$ for diffusion-mediated and subsequently $L \lesssim t$ for convection-mediated transport. These a rates re in agreement with the heuristically expected coarsening rates. (Received August 10, 2010)