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Mixing from diffusion and natural convection in binary non-equilibrium fluid phases LAURENCE RONGY, Universite Libre de Bruxelles ULB, KJETIL HAUGEN, ABBAS FIROOZABADI, Yale University — The mixing of two non-equilibrium fluid phases is relevant to a large number of problems in industry and in nature. Important applications are improved oil recovery and carbon sequestration. Our work provides a realistic description of the mixing in non-ideal fluids, which is needed to assess the efficiency of oil extraction and the storage capacity in geological formations. We also show how to determine diffusion coefficients accurately in non-ideal fluids at reservoir conditions from measurements such as pressure evolution and gas-liquid level data whereas most techniques are restricted to measurements at atmospheric pressure only.

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