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Luis Caffarelli and **Betul Orcan-Ekmekci*** (orcan@rice.edu). *Homogenization results for Stationary Ergodic Free Boundary Problems in \mathbb{R}^2 : Elliptic Case in Layered Form.*

In this study, we present some results about a homogenization problem for the largest subsolution of a one-phase free boundary problem (FBP) which has a stationary ergodic layered free boundary in \mathbb{R}^2 . This problem is motivated by Bernoulli type FBP with nonconstant free boundary condition (FBC) on random media. For both exterior and interior Bernoulli homogenization problems, the normal vector direction of the free boundary plays an important role for the limit and this study, which can be considered as the "planary" version problem, enables us to understand the asymptotic behavior of the free boundary in the limit. (Received September 24, 2012)