ON THE LOCAL SOLVABILITY OF
THE TWO-DIMENSIONAL HELE–SHAW PROBLEM
WITH FRACTIONAL DERIVATIVE
WITH RESPECT TO TIME

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We study the two-dimensional quasistationary Stefan probem (the Hele–Shaw problem) in which the motion of the free boundary is described by a "fractional" Darcy law. We prove the existence and uniqueness of a classical solution to the free boundary problem for a small time interval.

Key words and phrases: quasistationary Stefan problem, anomalous diffusion, Caputo derivative, regularizer, coercive estimate.

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