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Parabolic free boundary problems

The results obtained jointly with D. Apushkinskaya and H. Shahgholian will be presented. We study the regularity properties of solutions to some parabolic free boundary problems near the fixed boundary where zero Dirichlet condition is assumed. Optimal regularity of solutions is proved without any sign restrictions on solutions. In the case of the obstacle problem, where solutions are nonnegative, we study the properties of the free boundary as well. The exact representation of the global solutions in the entire half-space is established. Based on it we investigate the behavior of the free boundary near contact points.