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SINGULAR ASYMPTOTICS IN THE CAUCHY PROBLEM FOR A PARABOLIC EQUATION WITH A SMALL PARAMETER

S. V. Zakharov

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Results of investigation of the asymptotic behavior of solutions to the Cauchy problem for a quasi-linear parabolic equation with a small parameter at a higher derivative in neighborhoods of singular points of solutions of the limit problem are presented. Interest to the problem under consideration is explained by its applications in investigations of the evolution of a wide class of physical systems and probabilistic processes such as acoustic waves in fluid and gas, hydrodynamical turbulence and nonlinear diffusion.

Keywords: parabolic equation, singular asymptotics, singular points, shock waves, gradient catastrophe, Whitney fold function, renormalization.

S. V. Zakharov Cand. Phys.-Math. Sci., Krasovskii Institute of Mathematics and Mechanics, Ural Branch of the Russian Academy of Sciences, Yekaterinburg, 620990 Russia, e-mail: svz@imm.uran.ru.

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