1100-35-200 **Mikhail D Surnachev*** (peitsche@yandex.ru), Keldysh Institute of Applied Mathematics, Miusskaya Sq. 4, Moscow, 125047, Russia. *On regularity of solutions to nonlinear parabolic equations degenerating on a part of the domain.*

In this talk I will discuss regularity of solutions to nonlinear parabolic equations uniformly degenerating on a part of the domain. Consider the equation $\omega_\varepsilon(x)u_t = div(\omega_\varepsilon(x)|\nabla u|^{p-2}\nabla u)$, $x = (x_1, \ldots, x_n) \in \Omega \subset \mathbb{R}^n$, $t \in [0, T]$, where $\omega_\varepsilon(x_1, \ldots, x_{n-1}, x_n) = 1$ if $x_n < 0$, $\omega_\varepsilon(x_1, \ldots, x_{n-1}, x_n) = \varepsilon$ for $x_n > 0$. In any cylinder $(\Omega \cap \{|x_n| > \delta > 0\}) \times [0, T]$ the equation falls in the framework of the theory developed by E. DiBenedetto, U. Gianazza, V. Vespri and other authors - solutions are Hölder continuous, locally bounded, and satisfy an intrinsic form of Harnack's inequality. However, if we work in a domain which crosses the interface $\{x_n = 0\}$ the standard methods give results which degenerate with respect to the small parameter ε. I obtain regularity estimates independent of ε. This work extends earlier results obtained for the linear parabolic equations by Yu.A. Alkhutov and V. Liskevich. The method works for general nonlinear parabolic equations of the p-Laplace type. The author was partially supported by RFBR grant no. 12-01-00058-a and Russian Ministry of Science and Education grant no. 14.B37.21.0362 (Received February 08, 2014)