Asymptotic Approximation of Solution of Quasilinear Parabolic Boundary Value Problem in a Two-level Thick Junction of Type 3:2:2

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A thick junction is a union of some domain (the *junction's body*) and a large number of thin domains, which are ε-periodically attached to some manifold (the *joint zone*) on the boundary of the junction's body. Here ε is a small discrete parameter, which characterizes thickness of the attached thin domains, their quantity and distance between neighboring thin domains. The type l:m:n of a thick junction refers respectively to limiting dimensions (as $\varepsilon \to 0$) of the junction's body, the joint zone, and each of the attached thin domains.

A *multi-level* thick junction is a thick junction with thin domains divided into finitely many levels depending on their geometrical structure and boundary conditions imposed on their surfaces. Moreover, the thin domains from each level ε-periodically alternate along the joint zone.

We consider a quasilinear parabolic boundary value problem in a two-level thick junction of type 3:2:2 with different quasilinear Fourier boundary conditions on the surfaces of the thin domains from each level. An approximation function for the solution of such problem is constructed and the asymptotic estimate in the corresponding Sobolev space is derived.