ADDENDUM TO THE ARTICLE "STATIC THEORY OF THE TRANSFER OF SCALAR SUBSTANCE IN INHOMOGENEOUS TURBULENCE"

B. A. Kolovandin and I. A. Vatutin

In our article [1] the terms

$$\left(\frac{\partial}{\partial \xi_j}\,\overline{u_i'\gamma' p}\right)_0 \tag{1}$$

in Eqs. (15) and (16) were omitted without any reasons being given.

One can obtain the following equation for the quantity (1):

$$\frac{1}{4\rho}\cdot\Delta_x\left(\frac{\partial}{\partial \xi_j}\,\overline{u_i'\gamma' p}\right)_0 + 2\,\frac{\partial U_m}{\partial x_n}\left(\frac{\partial^2}{\partial \xi_m\,\partial \xi_j}\,\overline{u_i'\gamma' u_n}\right)_0$$

$$+\frac{1}{2}\cdot\frac{\partial^2 U_m}{\partial x_n\,\partial x_j}\cdot\frac{\partial}{\partial x_m}\,\overline{u_i u_n \gamma} + \frac{1}{\rho}\left(\Delta\xi\,\frac{\partial}{\partial \xi_j}\,\overline{u_i'\gamma' p}\right)_0 + \left(\frac{\partial^3}{\partial \xi_m\,\partial \xi_n\,\partial \xi_j}\,\overline{u_i'\gamma' u_m u_n}\right)_0 = 0 \tag{2}$$

starting from the Poisson equation for pressure pulsations.

Employing the concept of discrete homogeneity [1] applicable to the terms which are differential operators with respect to ξ_i at the point $\vec{\xi} = 0$ of two-point correlations as well as the quasinormality hypothesis of Millionshchikov the following relations can be obtained:

$$\frac{1}{\rho}\left(\Delta\xi\,\frac{\partial}{\partial \xi_j}\,\overline{u_i'\gamma' p}\right)_0 + \left(\frac{\partial^3}{\partial \xi_m\,\partial \xi_n\,\partial \xi_j}\,\overline{u_i'\gamma' u_m u_n}\right) = 0,$$

$$\left(\frac{\partial^3}{\partial \xi_m\,\partial \xi_n\,\partial \xi_j}\,\overline{u_i'\gamma' u_m u_n}\right)_0 = 0. \tag{3}$$

Moreover, in view of the condition

$$(L_{\text{or},\ldots,t}\,\overline{u_i u_j,\ \ldots,\ u_m'})_0^* = (L_{\text{or},\ldots,t}\,Q_{ij,\ldots,m})_0,$$

the following relation

$$\left(\frac{\partial^2}{\partial \xi_m\,\partial \xi_j}\,\overline{u_i'\gamma' u_n'}\right)_0 = \left(\frac{\partial^2}{\partial \xi_m\,\partial \xi_j}\,\overline{u_i' u_n}\right)_0 \frac{(\Delta\xi\,\overline{u_i'\gamma' u_n})_0}{(\Delta\xi\,\overline{u_i' u_n})_0} = \frac{1}{3}\,S_2\,\bar{\rho}_{ss}\left(\bar{\gamma}^2 + 2\bar{q}^2\,\frac{\bar{\rho}_{\gamma\gamma}}{\bar{\rho}_{ss}}\right)^{\frac{1}{2}} F_{mj}^{in},$$

can be obtained for the unknown term in Eq. (2) similarly as (20), where

$$F_{mj}^{in} = \frac{1}{2}\,(1 - 4\bar{c}_0)(\delta_{mn}\delta_{ij} + \delta_{im}\delta_{jn}) - 2R_{in}\delta_{jm} + \bar{c}_0\,(R_{im}\delta_{jn} + R_{mn}\delta_{ij} + R_{ij}\delta_{mn} + R_{jn}\delta_{im}). \tag{4}$$

Equation (2) together with (3) and (4) completes the system of Eqs. (1), (14)-(16) given in [1].

LITERATURE CITED

1. B. A. Kolovandin and I. A. Vatutin, Inzh. Fiz. Zh., 20, No. 4 (1971).

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