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Abstracts of Short Communications and Posters

Section:

10. Partial Differential Equations

1991 MS Classification: not given

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On some modification of Navier–Stokes equations

We consider the problem (see [1])

$$\frac{\partial u_k}{\partial t} - \sum_{i=1}^{n} \mathcal{D}_i \left(|u_k|^{p_i-2} \mathcal{D}_i u_k \right) + \sum_{i=1}^{n} u_i \mathcal{D}_i u_k + \mathcal{D}_k p = h_k(x)\,, \quad k = \overline{1,n} \tag{1}$$

$$\mathrm{div}\ u = 0\,, \quad (x,t) \in \Omega \times (0,T)\,, \tag{2}$$

$$u(x,0) = 0\,, \quad u\Big|_{\Gamma} = 0\,, \quad \Gamma = \partial\Omega \times (0,T)\,, \tag{3}$$

here $\Omega \in R^n (n \geq 1)$ is bounded domain with smooth boundary $\partial\Omega$.

We prove uniqueness and solvability theorems.

[1] J. -L. Lions, Quelque méthodes . . . , 1969, Paris.