Improved $\varepsilon$-expansion in theory of turbulence Calculation of Kolmogorov constant and skewness factor
L.Ts. Adzhemyan, M. Hnatich, J. Honkonen
University of P.J.Safarik, Kosice, Slovak republic
hnatic@saske.sk

The method for improvement of $\varepsilon$-expansion in the theory of developed $d$-dimensional turbulence, based on the renormalization of random forcing in stochastic Navier-Stokes equation, has been suggested. This renormalization takes into account additional divergences, which appear as $d \to 2$. The first $n$ terms of routine $\varepsilon$-expansion are correctly reproduced in $n$-approximation of perturbation theory, which includes such a renormalization, and in the rest coefficients of this expansion the first $n$ terms of its Loran series are correctly reproduced with respect to the parameter $d-2$. The Kolmogorov constant and skewness factor calculated in the one-loop approximation are in a tolerable agreement with their most acceptable experimental values.
Key Words: developed turbulence, field-theoretic methods, renormalization group, scaling, Kolmogorov constant, skewness