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CORRIGENDUM

I. An experimental study of the decay of temperature fluctuations in grid-generated turbulence

By Z. WARHAFT AND J. L. LUMLEY

Journal of Fluid Mechanics, vol. 88, 1978, pp. 659–684

II. An experimental study of the effect of uniform strain on thermal fluctuations in grid-generated turbulence

By Z. WARHAFT

Journal of Fluid Mechanics, vol. 99, 1980, pp. 547–573

III. The mixing of passive helium and temperature fluctuations in grid turbulence

By A. SIRIVAT AND Z. WARHAFT

Journal of Fluid Mechanics, vol. 120, 1982, pp. 475–504

These papers deal primarily with the evolution of scalar variance and the dependence of this evolution on the scalar and velocity length- and timescales. Subsidiary measurements concerning the cross-correlation $\rho_{u\theta}$ between the longitudinal velocity fluctuations u and temperature fluctuations θ, were also reported; it is these results that are incorrect. The principal results are unaffected.

Papers I and III require only minor corrections, but for paper II the correction is more significant.

The error in $\rho_{u\theta}$ stems from not compensating the velocity-fluctuation signal for contamination by the temperature fluctuations (on the other hand, contamination of the temperature fluctuation signals by the velocity fluctuations was accounted for). However, the scalar-fluctuation intensity was too small to affect velocity variances and spectra, and thus none of the variances, spectra or length-scales (be they scalar or velocity) are in need of revision. The exquisite sensitivity of $\rho_{u\theta}$ to thermal fluctuations is discussed in Perry (1982).

In paper I figure 19 needs revision. For the heated-grid experiments $\rho_{u\theta}$ was found to be approximately -0.3 at $x/M = 25$. When properly compensated, this value changes to approximately -0.23, and all downstream values should be reduced in magnitude by about 0.07.

In paper II figures 23–27 are incorrect. These results show that the contraction induced significant values of $\rho_{u\theta}$. In the post contraction region u is very small and contamination becomes a severe problem. When the results are corrected, the value of $\rho_{u\theta}$ is close to zero both before and after the contraction, and no trend can be found for its evolution. The increase in the magnitude of $\rho_{u\theta}$ as the current in the mandoline is increased (figures 23 and 26) is also incorrect, since increasing the current in the mandoline wires produces larger temperature fluctuations, which increases the contamination of $\rho_{u\theta}$.

In paper III figure 15 is incorrect; when properly compensated $|\rho_{u\theta}| < 0.1$ for all results.

In summary, for *all* mandoline experiments $\rho_{u\theta}$ is negligible, while for heated-grid experiments $\rho_{u\theta}$ is negative, with a value around -0.23. This latter result is consistent with the results of Sreenivasan *et al.* (1980, figure 12). It must be emphasized that none of the principal results of these papers (concerning the dependence of scalar-variance decay on thermal scale size, with or without a contraction, and the values of the scalar or velocity variance) is affected. Furthermore, in the recent experiments of Sirivat & Warhaft (1983) all cross-correlations were corrected for both temperature and velocity contamination, hence these measurements are not affected either.

The error came to light during my recent collaboration with Mr Bai-Kun Ma, whom I thank.

REFERENCES

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Sirivat, A. & Warhaft, Z. 1983 The effect of a passive cross-stream temperature gradient on the evolution of temperature variance and heat flux in grid turbulence. *J. Fluid Mech.* **128**, 323–346.

Sreenivasan, K. R., Tavoularis, S., Henry, R. & Corrsin, S. 1980 Temperature fluctuations and scales in grid-generated turbulence. *J. Fluid Mech.* **100**, 597–621.