

Abstract Submitted
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Experimental verification of turbulence models for pressure diffusion process in plane turbulent jet¹ OSAMU TERASHIMA, YASUHIKO SAKAI, KOUJI NAGATA, YASUMASA ITO, Nagoya University — We performed simultaneous measurement of the three velocity components and the pressure in a plane turbulent jet, and examined turbulence models related to the pressure diffusion process, such as gradient-diffusion model and the model for the rapid/slow terms of the pressure diffusion term. The results show that the gradient-diffusion model developed in the previous studies are valid only in the region where the turbulent intensity and the turbulent/non-turbulent intermittency are high and the production of the turbulent energy is dominant in comparison with other processes such as the convection and diffusion of the turbulent energy in the turbulent energy budget. In addition, it is found that the pressure diffusion of the turbulent energy cannot be modeled accurately by using only the slow term, and its accuracy is improved by considering both rapid and slow terms in the model. This result indicates that modeling the pressure diffusion process using only the slow term has a certain risk leading to a misunderstanding of the turbulent energy transport process.

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