

SETUP OF TURBULENCE MECHANICS ACCOUNTING FOR A PREFERRED ORIENTATION OF EDDY ROTATION

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Abstract

Some principal aspects of a modified setup of turbulence mechanics accounting for a preferred orientation of eddy rotation by distinguishing the velocity fluctuations at each flow field point (in addition to their magnitude and direction) by the curvature of their streamlines are discussed. The approach is formalized by including the velocity fluctuation streamline curvature radius into the set of arguments of the probability distribution specifying the applied statistical averaging procedure. It is shown that the decomposed presentation of the suggested turbulence mechanics, resulting from the simultaneous application of a sequence of averaging operations of the same type, enriches the setup by reflecting several aspects of the multi-scale turbulence structure (like cascading processes) immediately in terms of average fields.