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Titolo	Small-Scale Structures in Three-Dimensional Hydrodynamic and Magnetohydrodynamic Turbulence [[electronic resource]] : Proceedings of a Workshop Held at Nice, France, 10–13 January 1995 // edited by Maurice Meneguzzi, Annick Pouquet, Pierre-Louis Sulem
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Disciplina	532/.517
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Nota di contenuto	Small-scale behavior in distorted turbulent boundary layers at high Reynolds number -- Vortex stretching and enstrophy generation in numerical and laboratory turbulence -- The role of singularities in Euler -- On a possible Euler singularity during transition in a high-symmetry flow -- Vortex dynamics in numerical simulations of transitional and turbulent shear flows -- Turbulent mixing: small-scale properties -- Compressible flows and vortex stretching -- Vortex models of the fine

scales of turbulence -- Development of turbulence in a confined elliptic vortex -- Axial dynamics of viscous vortices -- Influence of the low pressure filaments on the velocity statistics in a turbulent shear flow -- Geometric and topological aspects of vortex filament dynamics under LIA -- Nonlinear Schrödinger Equation: An hydrodynamical tool? -- Inertial-range intermittency -- Statistics of small-scale structures and a dynamical mechanism of cascade -- New results on turbulence in helium -- Structures in turbulence and multifractal universality -- Scaling laws of two-dimensional turbulence -- Scaling laws in the Solar Wind turbulence -- Multiplicative cascade models and multifractality -- Turbulent jets: Reichardt's inductive theory and intermittency corrections -- Transverse and longitudinal scaling laws in homogeneous and non-homogeneous low Re ? turbulence -- Morphology of the mixing layer in the Rayleigh-Taylor instability -- Stratified turbulence: Structural issues, and turbulent diffusion -- Small- and large-scale structures of the decaying turbulence in a continuously stratified liquid -- On the vertical transport of a passive scalar in a stratified medium -- Flow field around a circular obstacle emerging from an erosion scour hole -- New variants to the dynamic Subgrid Scale Model -- Magnetohydrodynamic turbulence with net currents -- High Reynolds number vortices with magnetic field in non-axisymmetric strain -- A model for the distribution of magnetic flux in high beta MHD turbulence -- Anisotropy in incompressible and compressible 3D MHD turbulence -- Current sheets in three-dimensional MHD turbulence -- The role of coherent structures in magnetohydrodynamic turbulence -- Scale-invariant plasma motions near X-points -- On the nature of 3D reconnection -- How does fast reconnection work? -- Current sheets near magnetic separatrix surfaces -- Parallel computation of magnetic fluxtube reconnection -- Fine structure in fast dynamo computations -- Numerical study of the dynamo effect in a cylinder and the role of small scales -- A flow-field instability by the hydro-dynamical "alpha-effect" -- Formation of thin current sheets in magnetospheres -- Turbulence in the interstellar medium -- Dynamo generated turbulence in discs -- Small scales in the solar corona -- Solar wind turbulence: Comparison of MHD and hybrid simulations -- Nonlinear dynamics of dispersive Alfvén waves -- Large scale circulation induced by small scale surface gravity waves.

Sommario/riassunto

Small-scale structures in turbulent flows appear as a subtle mixture of order and chaos that could play an important role in the energetics. The aim here is a better understanding of the similarities and differences between vortex and current dynamics, and of the influence of these structures on the statistical and transport properties of hydrodynamic and magnetohydrodynamic turbulence, with special concern for fusion plasmas, and solar or magnetospheric environments. Special emphasis is given to the intermittency at inertial scales and to the coherent structures at small scales. Magnetic reconnection and the dynamo effect are also discussed, together with the effect of stratification and inhomogeneity. The impact of hydrodynamic concepts on astro and geophysical observations are reviewed.
