

# Contents

<b>1</b>	<b>Turbulence Theory</b>	1
1.1	Fundamental Equations of Compressible Fluid Dynamics.	1
1.2	Inertial Range Scaling	3
1.2.1	Incompressible Turbulence.	4
1.2.2	Compressible Turbulence.	6
1.3	Intermittency.	9
1.4	Self-Gravity	13
1.4.1	Analytical Theories of the Clump Mass Function	14
1.4.2	The Rate of Compression.	17
	References	19
<b>2</b>	<b>Simulation Techniques</b>	21
2.1	Turbulence Forcing	21
2.2	Adaptive Mesh Refinement.	25
2.3	Large Eddy Simulations	28
	References	39
<b>3</b>	<b>Turbulent Velocity Statistics.</b>	41
3.1	Global Averages and Probability Density Functions.	42
3.2	Two-Point Statistics of the Velocity.	46
3.2.1	Absolute Scaling Exponents	46
3.2.2	Relative Scaling Exponents	48
3.3	Mass-Weighted Two-Point Statistics	55
3.4	Subgrid Scale Statistics	58
3.4.1	Turbulence Energy Flux.	58
3.4.2	Scaling of the Subgrid Scale Turbulence Energy	63
	References	67

**4 Turbulent Density Statistics . . . . . 69**

4.1 Global Averages and Probability Density Functions. . . . . 69

4.2 Clump Mass Functions. . . . . 76

4.3 Local Support Against Gravity . . . . . 81

References . . . . . 88

**Index . . . . . 89**

<http://www.springer.com/978-3-319-01474-6>

Numerical Modelling of Astrophysical Turbulence

Schmidt, W.

2014, VIII, 90 p. 50 illus., 22 illus. in color., Softcover

ISBN: 978-3-319-01474-6