

Contents

CONTRIBUTORS	v
PREFACE	vii

Chapter I

Fluctuations in Magnetic and Dielectric Solids

James Brophy

1. Introduction	1
2. Magnetic Noise	2
3. Critical Fluctuations	12
4. Barkhausen Noise	21
5. Noise in Magnetic and Electrostatic Recording	27
6. Summary	33
References	34

Chapter II

The Theory of Thermal and Imperfection Fluctuations in Ferromagnetic Solids

William Fuller Brown, Jr.

1. Introduction	37
2. Temporal Fluctuations (Thermal Agitation)	38
3. Spatial Fluctuations (Inhomogeneities)	60
4. Joint Effect of Temporal and Spatial Fluctuations	72
5. Conclusions	76
References	76

Chapter III

Rotational Brownian Motion

L. Dale Favro

1. Introduction	79
2. Free Rotational Diffusion	82
3. Hindered Diffusion	91
4. Use of the Green's Function in Physical Applications	97
5. Note on the Quantum Mechanical Case	100
References	100

Chapter IV**Instabilities in Solid-State Plasmas****Setsuo Ichimaru**

1. Introduction	103
2. Dielectric Response Function of Plasmas	105
3. Plasma Wave Instabilities	116
4. Fluctuations in Plasmas	122
5. Concluding Remarks	134
References	136

Chapter V**Fluctuations in Nonlinear Systems****N. G. van Kampen**

1. Introductory Section	139
2. The Diode Model	150
3. General Theory	156
4. Microscopic Theories	167
References	175

Chapter VI**Critical Fluctuations****A. Münster**

1. Introduction	180
2. Basic Concepts	181
3. Critical Fluctuations	209
4. Critical Opalescence	231
5. Related Phenomena	247
References	264

Chapter VII**Fluctuations Due to Electronic Transitions and Transport in Solids****K. M. van Vliet and J. R. Fassett**

1. Introduction	268
2. Analytical Approaches to Noise Processes Not Involving Spatial Coordinates	270
3. Thermodynamic Approach	287
4. Generation-Recombination Noise	293
5. Noise Problems Involving Transport Processes	320
6. Applications to "Transport Noise"	332
Appendix. Remarks on the Multivariate Wiener-Khintchine Theorem	348
References	351

Chapter VIII**Fluctuations of Hot Electrons****P. J. Price**

1. Introduction	355
2. Simple Model	359
3. Exact Theory	361
4. Evaluation	365
5. Anisotropy	368
6. Experimental	371
7. Further Considerations	373
Appendix	375
References	379
 Author Index	381
 Subject Index	386