

Contents

Part I Astronomical Evidence for Dark Matter

Large-Scale Structure from Galaxy and Cluster Surveys	
<i>L. Guzzo</i>	3
The Dark Mass at the Center of the Milky Way	
<i>A. Eckart and Ch. Straubmeier</i>	16
Dim Matter in the Disks of Low Surface Brightness Galaxies	
<i>B. Fuchs</i>	28
Black Holes in Active Galactic Nuclei	
<i>G.M. Madejski</i>	36
Comparison of Black Hole and Fermion Ball Scenarios of the Galactic Center	
<i>N. Bilić et al.</i>	46
Dark Matter and Baryons in Groups and Clusters of Galaxies	
<i>N. Menci, A. Cavaliere and A. Lapi</i>	53
Baryonic Dark Matter and Machos	
<i>K. Griest</i>	62
The Next Generation Microlensing Search: SuperMacho	
<i>A.J. Drake et al.</i>	71
Dynamics of Dark Matter Cusps	
<i>D. Merritt and M. Milosavljević</i>	79
Testing Hierarchical Structure Formation Scenarios	
<i>C. Cress</i>	90

Part II Cosmic Microwave Background

Cosmology Rounding the Cape	
<i>A. Melchiorri</i>	101

Large Scale Structure in an Era of Precision CMB Measurements <i>A.R. Cooray</i>	119
Astrophysical Constraints on Neutralino Dark Matter from Multifrequency Observations of Galaxy Clusters <i>S. Colafrancesco</i>	131
<hr/>	
Part III Thermodynamics of Dark Matter	
<hr/>	
On the Formation of Degenerate Heavy Fermion Stars <i>R. Lindebaum et al.</i>	149
The Self-Gravitating Fermi Gas <i>P.-H. Chavanis</i>	156
Dark Matter in the Halo of the Galaxy <i>N. Bilić, G.B. Tupper and R.D. Viollier</i>	164
<hr/>	
Part IV Supersymmetry and Dark Matter	
<hr/>	
Supersymmetry and Dark Matter <i>R. Arnowitt and B. Dutta</i>	175
On WIMP Detection Rates in Constrained SUSY <i>L. Roszkowski</i>	189
Status of Supersymmetry in the Light of Recent Experiments <i>U. Chattopadhyay, A. Corsetti and P. Nath</i>	202
Theoretical Directional and Modulated Rates for Direct SUSY Dark Matter Detection <i>J.D. Vergados</i>	217
Nonthermal Production of Gravitinos and Inflatinos in the Inflationary Universe <i>P. Nilles and M. Peloso</i>	228
Supersymmetric Dark Matter and Recent Experimental Constraints <i>A.B. Lahanas, D.V. Nanopoulos and V.C. Spanos</i>	238
Axinos as Cold Dark Matter Candidate <i>J.E. Kim</i>	246
LEP Constraints on Susy Dark Matter <i>S. Rosier-Lees</i>	255

Part V Inflation and Dark Energy

Cosmology from Large Scale Structure

A.J.S. Hamilton et al. 267

Natural Quintessence and the Brane World

C.P. Burgess 274

Self-Tuning Solution of the Cosmological Constant Problem with Antisymmetric Tensor Field

H.M. Lee 285

Bad News for Tracking Quintessence

S.A. Bludman 293

Gauged Inflation

R. Hofmann and M.Th. Keil 296

Dark Matter, Dark Energy and Chaplygin Gas

N. Bilić, G.B. Tupper and R.D. Viollier 306

Dark Matter Distribution from Gravitational Entropy Evolution

M.P. Leubner 312

Cosmology with a Long-Range Repulsive Force

W.H. Kinney, M. Brisudova and R. Woodard 322

Part VI Structure Formation and Dark Matter

Constraining Dark Matter Candidates from Structure Formation

C. Boehm, P. Fayet and R. Schaeffer 333

Dark Matter-Photon Interactions: Are They Allowed?

C. Boehm and K.B. Bruce 345

Scalar Field Dark Matter and Galaxy Formation

M. Alcubierre et al. 356

Part VII Neutrinoless Double Beta Decay and Hot Dark Matter: Phenomenology and Experiments

Status of Evidence for Neutrinoless Double Beta Decay

H.V. Klapdor-Kleingrothaus, A. Dietz and I.V. Krivosheina 367

Evidence for Neutrinoless Double Beta Decay Revisited - Reply to a Comment

H.V. Klapdor-Kleingrothaus, A. Dietz and I.V. Krivosheina 404

Neutrinos: Summarizing the State-of-the-Art <i>J.W.F. Valle</i>	412
New Constraints on Massive Degenerate Neutrinos from Big-Bang Nucleosynthesis and Cosmic Microwave Background Fluctuations <i>T. Kajino et al.</i>	435
Neutrino Mass from Tritium β Decay <i>E. Otten</i>	441
KATRIN: The Future of Tritium Beta Decay Experiments <i>M. Steidl (for the KATRIN collaboration)</i>	449
<hr/>	
Part VIII Direct Dark Matter Searches	
<hr/>	
WIMP Search by the DAMA Experiment at Gran Sasso <i>R. Bernabei et al.</i>	459
GENIUS and GENIUS-TF - The Potential for Cold Dark Matter and Solar Neutrino Searches <i>H.V. Klapdor-Kleingrothaus and I.V. Krivosheina</i>	473
ZEPLIN III – A Two Phase Xenon Dark Matter Detector <i>J. Dawson et al.</i>	485
ZEPLIN IV: A One Ton WIMP Detector <i>D.B. Cline</i>	492
Status of Direct Dark Matter Detection Experiments at the Boulby Mine <i>N.J.T. Smith (for the Boulby Dark Matter Collaboration)</i>	499
Dark Matter Search in the EDELWEISS Experiment <i>A. Juillard et al.</i>	509
The CRESST Dark Matter Search Status and Future <i>W. Seidel et al.</i>	517
The Status of SIMPLE in 2002 <i>J.I. Collar et al.</i>	524
<hr/>	
Part IX Indirect Dark Matter Searches	
<hr/>	
Atmospheric Neutrinos, WIMPs and Monopoles: Physics with the AMANDA Neutrino Telescope <i>W. Rhode (for the AMANDA Collaboration)</i>	531

Dark Matter Prospects with the ANTARES Neutrino Telescope	
<i>L. Thompson (on behalf of the ANTARES Collaboration)</i>	542

Part X Neutrino Oscillation Experiments and New Underground Laboratories

Results and Implications of First SNO	
<i>A. Hime (for the SNO Collaboration)</i>	553
Long Baseline Neutrino Oscillation Experiments	
<i>K. Zuber</i>	564
Future Underground Laboratory in Finland	
<i>J. Peltoniemi (for CUPP project group)</i>	575

Part XI Cosmic Rays, Cosmic Anti-Matter and Dark Matter

Clustering, GUT Scale and Neutrino Masses in Ultrahigh Energy Cosmic Rays	
<i>Z. Fodor</i>	585
Cosmic Anti-Matter and Dark Matter Searches with AMS-02 on the International Space Station ISS	
<i>W. Wallraff (for the AMS collaboration)</i>	597
Absolute Neutrino Mass Phenomenology	
<i>H. Päs and T.J. Weiler</i>	609

Part XII Concluding Remarks

DARK 2002 and Beyond, Concluding Remarks for Dark 2002	
<i>J. Ellis</i>	627
Author Index	628
List of Participants	628

Dark Matter in Astro- and Particle Physics
Proceedings of the International Conference DARK
2002, Cape Town, South Africa, 4-9 February 2002
Klapdor-Kleingrothaus, H.-V.; Viollier, R.D. (Eds.)
2002, XXV, 663 p., Hardcover
ISBN: 978-3-540-44257-8