

The Magnetized Interstellar Medium

Proceedings of the conference

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Preface

Magnetic fields are found everywhere in our cosmic Universe. We know about their existence on the Earth, we see their action on the Sun during solar eclipses, they were measured in the planets by magnetometers on board of spacecraft. Optical astronomy, using the Zeeman effect, showed the existence of magnetic fields in the Sun and in ‘magnetic’ Ap stars. Radio astronomy has given us several methods of remote sensing of magnetic fields. Observations of the synchrotron radiation have been made in Galactic objects, in nearby and distant galaxies and in clusters of galaxies. The polarization of the radio waves is an immediate indicator of the presence of magnetic fields in the emission regions. Faraday rotation is observed to be caused by the Earth’s ionosphere, by passage of polarized waves in the Galactic mageto-ionic medium and in distant radio galaxies. Radio Zeeman effect has been observed in a variety of Galactic sources. From this wealth of evidence one would expect that the studies of magnetic fields and their effects would have an important presence in the astrophysical community. The opposite is the case. Many of our theoretical colleagues avoid considering magnetic fields because they complicate the nature of the numerical simulations. Yet magnetic fields are invoked in the star-formation process, in the formation of jets and in many other important physical processes, observed with modern astronomical methods. Magnetic fields are an integral part of our cosmic Universe and their importance will become clearer as a result of conferences like the present one.

This conference is devoted to the ‘Magnetized Interstellar Medium’. This is a conference in a series of such gatherings that took place in Bonn (1998), Montreal (2000) and Bologna (2001). Astronomers and astrophysicists working in the field have come together to present new observations and to discuss the physical implications. Five days of lectures and discussions have given an interesting overview of the subject. The Scientific Organizing Committee has attempted to develop a balanced program that was somewhat hampered by visa restrictions and the present travelling difficulties. The Local Organizing Committee has chosen an excellent site at the Antalya Sheraton Hotel for the deliberations. One other aspect of the conference was to familiarize the Turkish astronomical community with this field of scientific endeavor. The proceedings of the conference will give a record of the lively talks and discussions.

The editors are grateful to Gabi Breuer and Walter Fußhöller in Bonn who had the task to bring the many heterogeneous contributions to a good readable and pictorial standard, respectively. With this book we hope to interest students and colleagues alike in the fascinating magnetic world.

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Contents

Preface	iii
Welcome addresses by R. Wielebinski, Z. Aslan, M.E. Özel and M.A. Alpar	v
 Session I The Galactic Magnetic Field	
The Large-scale Magnetic Field Structure of our Galaxy: Efficiently Deduced from Pulsar Rotation Measures	
<i>J.L. Han</i>	3
Statistical Analysis of Extra-galactic Rotation Measures	
<i>M. Johnston-Hollitt, C.P. Hollitt and R.D. Ekers</i>	13
A Re-examination of Data on Magnetic Fields in the Galaxy	
<i>R. Wielebinski and D. Mitra</i>	19
Structure Function Studies for Turbulent Interstellar Medium	
<i>X.H. Sun and J.L. Han</i>	25
 Session II Galactic Surveys	
Polarization Structures in the Canadian Galactic Plane Survey: A Multispectral View	
<i>R. Kothés and T.L. Landecker</i>	33
Polarization of the Outer Galaxy	
<i>R.I. Reid</i>	39
The Effelsberg 1.4 GHz Medium Galactic Latitude Survey (EMLS)	
<i>W. Reich, E. Fürst, P. Reich, B. Uyaniker, R. Wielebinski and M. Wolleben</i>	45
The DRAO 26-m Large Scale Polarization Survey at 1.41 GHz	
<i>M. Wolleben, T.L. Landecker, W. Reich and R. Wielebinski</i>	51
A Large-Scale Radio Polarization Survey of the Southern Sky at λ21cm	
<i>J.C. Testori, P. Reich and W. Reich</i>	57
Spectral Index Variations of Galactic Emission	
<i>P. Reich, W. Reich and J.C. Testori</i>	63
 Session III The Magnetized ISM	
The Novelty of the Polarized Sky	
<i>B. Uyaniker</i>	71
Unraveling the Structure in the ISM Through Radio Polarimetry	
<i>M. Haverkorn, P. Katgert, A. G. de Bruyn and F. Heitsch</i>	81
An Additional Source of Turbulence in the Warm ISM of the Inner Galactic Plane?	
<i>M. Haverkorn, B.M. Gaensler, N.M. McClure-Griffiths, J.M. Dickey and A.J. Green</i>	87

Faraday Rotation and Depolarization of Galactic Radio Emission in the Magnetized Interstellar Medium	
<i>E.N. Vinyajkin</i>	93
Modelling Faraday Screens in the Interstellar Medium	
<i>M. Wolleben and W. Reich</i>	99
Magnetic Fields and other Parameters of the Diffuse Galactic ISM	
<i>T.H. Troland</i>	105
Heating of the ISM by Alfvén-wave Damping	
<i>F. Spanier</i>	115
 Session IV Magnetic Fields in Molecular Clouds and SNRs	
Observations of Magnetic Fields in Molecular Clouds	
<i>R.M. Crutcher</i>	123
Collapse of Interstellar Molecular Clouds	
<i>D. Zengin, E.R. Pekünlü and E. Tiğrak</i>	133
Influence of the Diamagnetic Effect on Magnetorotational Instability in Accretion Discs	
<i>E. Akbaş and E.R. Pekünlü</i>	137
Magnetic Fields in Supernova Remnants	
<i>E. Fürst and W. Reich</i>	141
Polarized Emission from Optical Filaments in Two Low Surface Brightness Supernova Remnants	
<i>A. Yar-Uyaniker, B. Uyaniker and R. Kothes</i>	147
The Cygnus Loop: Two Colliding Supernova Remnants	
<i>B. Uyaniker, W. Reich, A. Yar-Uyaniker, R. Kothes and E. Fürst</i>	153
Galactic Distribution and the Luminosity Function of Pulsars	
<i>I. Yusifov and İ. Küçük</i>	159
Pulsars and the Warp of the Galaxy	
<i>I. Yusifov</i>	165
 Session V Extragalactic Magnetic Fields	
Magnetic Fields in Galaxies	
<i>M. Krause</i>	173
Magnetic Fields in Galaxies – 3D Numerical Simulations	
<i>M. Soida and K. Otmianowska-Mazur</i>	183
 Session VI The Polarized CMB	
Prospects for Polarimetry of the Interstellar Medium with the Planck Satellite	
<i>J.A. Tauber</i>	191
Observations in the BOOMERanG Field at 1.4 GHz	
<i>E. Carretti, G. Bernardi, S. Cortiglioni, R.J. Sault, M.J. Kesteven and S. Poppi</i>	201

A Template of Galactic Polarized Synchrotron Emission in the Frame of CMBP Experiments	
<i>G. Bernardi, E. Carretti, R. Fabbri, C. Sbarra, S. Poppi and S. Cortiglioni</i>	207
 Session VII Instrumental Developments	
PolKa: A New Polarimeter for Millimeter and Submillimeter Bolometer Arrays	
<i>G. Siringo, E. Kreysa, L.A. Reichertz and K.M. Menten</i>	215
Astronomical Research at the TUBITAK National Observatory	
<i>Z. Aslan</i>	221
DEFPOS (Dual Etalon Fabry-Perot Optical Spectrometer)	
<i>İ. Yeğinil, Ü. Kızıloğlu, M. Sahan, M. Akyılmaz and N. Aksaker</i>	227
The Erciyes University Radio Telescope Project for Neutral Hydrogen Observations in the Galaxy	
<i>İ. Küçük and I. Yusifov</i>	233
ROTSE–III Station in Turkey	
<i>M.E. Özel, Ü. Kızıloğlu and Z. Aslan</i>	237
 Session VIII Past, Present and Future	
The History of Radio Continuum Surveys	
<i>R. Wielebinski</i>	241
Conference Summary	
<i>R. Wielebinski</i>	245
 List of Participants	247



Conference participants prepared for the excursion



Visit of Aspendos antique theatre during the excursion