MEMORIE DELLA SOCIETÀ ASTRONOMICA ITALIANA

Vol.3 2003

47th Annual Meeting of the Italian Astronomical Society

Nuove frontiere dell'Astronomia Italiana

Trieste, 14-17 Aprile 2003

editors: Leo Girardi and Simone Zaggia

TABLE OF CONTENTS

P. Molaro
Foreword 10

Solar System and Planets

C. Barbieri
Planets, Moons and Minor Bodies of the Solar System 12

E. Dotto, M.A. Barucci, and M. Fulchignoni
Beyond Neptune, the new frontier of the Solar System 20

R.G. Gratton, R. Claudi, S. Desidera, F. Marzari, and M. Barbieri
Extra-solar planet studies: the Italian contribution 24

D. Spadaro
Structure and dynamics of magnetic loops in the solar corona 30

M. Messerotti, P. Zlobec, I. Coretti, M. Jurcev, and S. Padovan
TSRS diagnostics for Space Weather effects analysis 36

C. Barbieri, S. Magrin, S. Marchi, F. Marzari, A. Migliorini, H. Scholl, J. Skvarč and R. Albrect
Search for Trojans of Saturn, Uranus and Neptune with ASTROVIRTEL 40

S. Marchi, C. Barbieri, M. Lazzarin and E.M. Corsini
The double face of Triton: new observational results 44

M. Maris and S. T. Petcov
Predictions for the Spectrum Deformations and Energy Dependence of the Day-Night Asymmetry for the SNO Detector 48

Stars and Stellar Clusters

F. Palla
The formation of primordial stars 52

M. Limongi and A. Chieffi
Massive stars: presupernova evolution and explosive nucleosynthesis 58

F. D'Antona
The first phases of life of stars in Globular Clusters: an example of the problems of modern stellar structure computation 64

R.G. Pizzone, C. Spitaleri, S. Cherubini, A. Di Pietro, P. Figuera, M. Lattuada, Đ.Miljanić, A. Musumarra, M.G. Pellegriti, C. Rolfs, S. Romano, S. Tudisco, A.Tumino, S. Typel, V. Castellani, S. Degl'Innocenti
Indirect measurements of lithium isotopes destruction cross section in astrophysical environment 70

R. Pallavicini
Galactic open clusters: key tracers of stellar structure andevolution 74

F.R. Ferraro
Galactic Globular Clusters: the stellar laboratory 80

C. Cacciari
The Italian contribution to FLAMES: technology and science 86

E. Carretta
The Na-O anticorrelation in subgiants of metal-poor globular clusters: NGC 6397, M55 and M30 90

A. Bragaglia and M. Tosi
Old Open Clusters 94

L. Crivellari, E. Simonneau and O. Cardona
A numerical laboratory for the diagnostics of stellar properties 97

S. Degl'Innocenti, P. Cariulo, P.G. Prada Moroni and M. Marconi
The Pisa Evolutionary Library 101

T. Sivarani, P. Bonifacio and P. Molaro
CS 29497-030: Evidence for s-process operation in the Early Galaxy 105

Compact Objects, SN and GRBs

M. Turatto
Local Supernovae 109

O. Straniero, and L. Piersanti
Supernovae: the Final Fate of Stellar Evolution 115

G. Barbiellini, A. Celotti and F. Longo
A fireworks model for GRB structured jets 121

N. Masetti, E. Palazzi, E. Pian, A. Simoncelli and E. Maiorano
Optical and NIR monitoring of the GRB020405 afterglow 125

P. Selvelli, R. Gilmozzi and A. Cassatella
The recurrent nova T Pyx: a progenitor of a type Ia supernova? 129

G. Pizzichini, F. Giannotti, E. Morelli and the HETE team
Recent results from the HETE mission 133

The Galaxy and the Local Group

M. Tosi
Star formation histories in nearby galaxies 137

M. Cignoni, P.G. Prada Moroni and S. Degl'Innocenti
Local disk star counts: observational constraints on the stellar IMF 143

P. Bonifacio, L.Sbordone and G. Marconi
Our nearest neighbour is metal-rich 147

A. Pizzella, E.M. Corsini, F. Bertola, J. Magorrian, and M. Sarzi
CDM or PSEUDO-ISOTHERMAL HALOS in GALAXIES 151

C. Chiappini and F. Matteucci
Stellar yields from rotating stellar models: Their effect on chemical evolution model predictions 155

P. Marigo, Léo Girardi and C. Chiosi
The red tail of carbon stars in Local Group galaxies 159

D. Romano and F. Matteucci
The role of nova nucleosynthesis in Galactic chemical evolution 163

Extragalactic Astronomy and Observational Cosmology

A. Cimatti
Galaxy evolution in the K-band 167

M. Vaccari, C. Lari, L. Angeretti, C. Gruppioni, F. Pozzi, O. Prouton, A. Franceschini and G. Zamorani
Final Analysis of ELAIS 15 μm Fields 173

A. Comastri on behalf of the `HELLAS2XMM` team
Hard X-ray surveys and the X-ray background 179

S. Ettori, P. Tozzi, S. Borgani and P. Rosati
Scaling laws in X-ray Galaxy Clusters at $z > 0.4$ 180

M. Arnaboldi
Intracluster Planetary Nebulae in the Virgo cluster: tracers of diffuse light 184

S. Andreon, M. Pierre, for the XMM–LSS collaboration
The XMM–LSS project: a short presentation of the survey and of the first results 188

C. Baccigalupi
A Brief Outline of the Dark Energy Cosmology 192

A. Ferrara
The End of the Dark Ages 198

G. Vladilo, M. Centurión, V. D'Odorico and C. Péroux
Probing the HeII reionization epoch with Damped Ly α systems 205

S. Borgani
Cosmology with Clusters of Galaxies 209

A. Biviano, P. Katgert, and A. Mazure
The distribution of mass in galaxy clusters 210

A. Mercurio, M. Girardi, W. Boschin, P. Merluzzi, G. Busarello
Internal Dynamics of ABCG 209 at z$\sim$ 0.21 214

P. Marziani, J. W. Sulentic, R. Zamanov, M. Calvani, M. Della Valle, G. Stirpe and D. Dultzin-Hacyan
Using Quasars for Cosmology 218

R. Zamanov, P. Marziani, J. W. Sulentic, M. Calvani, R. Bachev, G. Stirpe, D. Dultzin-Hacyan
Accretion Parameters and AGN Diversity 222

C.S. Boschetti, P. Rafanelli, S. Ciroi, F. Di Mille, V. L . Afanasiev and S. N. Dodonov
Investigating the nuclear regions in Seyfert galaxies with 3D spectroscopy 226

V. Botte, S. Ciroi and P. Rafanelli
The BH-bulge relation for Narrow-Line Seyfert 1 and Seyfert 1 230

M. Centurión, P. Molaro, G. Vladilo, C. Péroux, V. D'Odorico, and S. Levshakov
On the origin of nitrogen:Clues from measurements in Damped Lyman α Systems 234

S. Ciprini
Blazars: the next gamma-ray view of GLAST 238

F. Cuttaia, N. Mandolesi, M. Sandri, and L. Terenzi
Projects and Progress in CMB Anisotropy Space Cosmology 242

F. Di Mille, P. Rafanelli, S. Ciroi and A. V. Moiseev
Kinematics in Seyfert Galaxies for testing the activity interaction relation 248

A. F. Martinez Fiorenzano, G. Vladilo and P. Bonifacio
Search for α variation in UVES spectra: Analysis of C IV and Si IV doublets towards QSO 1101-264 252

N. Masetti, L. Foschini, L.C. Ho, M. Dadina, G. Di Cocco, G. Malaguti and E. Palazzi
The Challenge of Identifying Optical Counterparts to Ultraluminous X-ray Sources 256

C. Péroux, M. Dessauges-Zavadsky, T.S. Kim, S. D'Odorico and R.G. McMahon
Sub-DLAs Abundances: Implications for the Cosmological Evolution of Metals 261

E. Pignatelli, C. Marmo, B. M. Poggianti, D. Bettoni, G. Fasano, J. Varela, M. Moles, P. Kjaergaard, W. Couch, and A. Dressler
WINGS: the first results 265

L. Silva, G.L. Granato, A. Bressan , G. De Zotti and L. Danese
The spheroidal galaxies-QSO connection: multiwavelength predictions 269

A. Wolter and G. Trinchieri
The Cartwheel ring under X-ray light 273

L. Lorenzi
An Expected Revolution of the Galaxy Around the Expansion Center 277

Instrumentation

F. Paresce
Recent Scientific Results with the VLT Interferometer 280

M. Capaccioli, E. Cappellaro, D. Mancini and G. Sedmak
The VLT Survey Telescope (VST) Project: a progress report 286

G. Tofani
ALMA: the project becomes real 292

R. Ragazzoni
Adaptive Optics: status and perspectivesin the 4..100m range telescopes 298

C. Cesarsky
ESO and Italy 303

P. Santin, P. Di Marcantonio, D.Popovic and E. Pozna
ESO-VLT Instrumentation The Control Software for the FLAMES-GIRAFFE-UVES Observing Facility 304

P. Rafanelli, F. Rampazzi, S. Ciroi, E.M. Corsini, F. Di Mille , M. D'Onofrio, S. Gardin and A. Pizzella
The Sky as a Laboratory: Living astrophysics from books to telescopes, using computers and data from space 308

P. Cinzano
A Laboratory of Photometry and Radiometry of Light Pollution (LPLAB) 312

Space Programs

E. Antonucci
Italian Space Solar Physics Programs within the International Living with a Star Initiative 316

M. Maris, C. Burigana, G. Cremonese, F. Marzari, S. Fogliani and M. Fulle
Diffuse and point-like foregrounds from the Solar System environment in the Planck 318

S. Sciortino
Recent Results and Perspectives of X-ray and Gamma-ray Astronomy 322

G. Pareschi, O. Citterio, M. Ghigo, F. Mazzoleni and D. Spiga
New X-ray Missions 323

I. Pagano, M. Rodonò, G. Bonanno, L. Buson, A. Cassatella, D. De Martino, W. Wamsteker, B. Shustov, M. Barstow, N. Brosch, Cheng Fu-Zhen, M. Dennefeld, A.I. Gomez de Castro, N. Kappelmann, J. Sahade, K. Van der Hucht, J.-E. Solheim, H. Haubold, A. Altamore, V. Andretta, M. Badiali, U. Becciani, I. Busà, E. Cappellaro, D. Cardini, S. Catalano, V. Castellani, M. Chiaberge, A. Chieffi, C. Chiuderi, R. Cosentino, G. Cremonese, G. Cutispoto, R. Falomo, F. Ferrini, M.G. Franchini, A. Frasca, F. Giovannelli, L. Gori, M.T. Gomez, M. Hack, A.F. Lanza, A. Lanzafame, M.L. Malagnini, E. Marilli, P. Marziani, F. Matteucci, C. Morossi, U. Munari, E. Pace, N. Panagia, L. Pasinetti, G. Piotto, F. Polcaro, M. Radovich, S. Ragaini, A. Rifatto, C. Rossi, S. Scuderi, P. Selvelli, R. Silvotti, L. Terranegra, M. Turatto, M. Uslenghi, R. Viotti
The World Space Observatory Project WSO/UV 327

A. Zacchei, S. Fogliani, M. Maris, L. Popa, N. Lama, M. Türler, R. Rohlfs, N. Morisset, M. Malaspina, F. Pasian
HouseKeeping and Science Telemetry: the case of Planck/LFI 331

Computational Astrophisycs

S. Massaglia, N. Zurlo and G. Bodo
Numerical simulations of astrophysical jets: comparison of integration schemes 335

R. Capuzzo-Dolcetta, P. Di Matteo, and P. Miocchi
Super computers in astrophysics and High Performance simulations of self-gravitating systems 341

P. Di Marcantonio, P. Santin, E. Pozna and P. Baksai
Moving ESO VLT instrumentation to Linux:first results with the Test Camera on UT3/Melipal 347

C. Barbieri, C. Blanco, B. Bucciarelli, R. Coluzzi, A. Di Paola, L. Lanteri, G.L. Li Causi, E. Marilli, S. Magrin, R. Nesci, A. Omizzolo, F. Rampazzi, C. Rossi, R. Stagni and R. Viotti
Digitization of the Archives of Plates of the Italian Astronomical Observatories and of the Specola Vaticana 351

A. Caproni, M. Pucillo, R. Smareglia, A. Zacchei and E. Oliva
WSSL: the Workstation Software System under Linux 355

N. Lama, C. Vuerli and F. Pasian
A Pipeline-Oriented Data Management System: Design and Implementation with an OODBMS 359

R. Nesci, C. Barbieri, B. Bucciarelli, C. Blanco, R. Coluzzi A. Dipaola, V. Greco, S. Magrin, E. Marilli, A. Omizzolo, F. Pedichini, F. Rampazzi and C. Rossi
Digitization and electronic distribution of the astronomical plate archives of Italian Astronomical observatories 364

F. Pasian, R. Smareglia, C. Vuerli, A. Zacchei, N. Lama and L. Benacchio
INAF Archives in the Framework of the Astronomical Data Grid 368

R. Cirami, M. Comari, C. Corte, P. Di Marcantonio, M. Pucillo, P. Santin and C. Vuerli
A new generation control system for astrophysical instruments 372

M. Vaccari, C. Lari, D. Fadda, C. Gruppioni, F. Pozzi, G. Rodighiero, A. Franceschini and G. Zamorani
The LARI Method for ISO-CAM/PHOT Data Reduction and Analysis 376

S. Zaggia, G. Taffoni, P. Bonifacio, P. Di Marcantonio, P. Molaro, and P. Santin
The TRIWULF Project: year one results 380