

Contents

PLENARY SESSIONS: SCIENCE IN THE VLT ERA AND BEYOND

Edited by Jacqueline Bergeron and Alvio Renzini

Science with FORS

I. Appenzeller, R. Bender, H. Bönhardt, S. Cristiani, M. Dietrich, K. Fricke, W. Fürtig, W. Gässler, R. Gilmozzi, R. Häfner, R. Harke, J. Heidt, H.-J. Hess, U. Hopp, W. Hummel, K. Jäger, P. Jürgens, R.-P. Kudritzki, M. Kümmel, K.-H. Mantel, D. Mehlert, W. Meisl, C. Moellenhoff, B. Muschelok, H. Nicklas, A. Renzini, P. Rosati, G. Rupprecht, R. Saglia, W. Seifert, S. Seitz, J. Spyromilio, O. Stahl, T. Szeifert, K. Tarantik	3
--	---

Science with ISAAC

A. Moorwood	12
-------------------	----

The Most Distant Galaxies

M. Pettini, C.C. Steidel, K.L. Adelberger, A.E. Shapley, M. Dickinson, M. Giavalisco	20
---	----

Nuclear Activity and Galaxy Evolution

G. Miley	32
----------------	----

Supernovae at High Redshift

B. Leibundgut	43
---------------------	----

Cosmic Star Formation History and the Brightness of the Night Sky

P. Madau	52
----------------	----

Galaxy Centers

R. Bender	61
-----------------	----

New Frontiers in the Solar System	
M.A. Barucci	70
Science with the Atacama Large Millimeter Array	
K.M. Menten	78
Synergy Between the VLT and the NGST	
H.S. Stockman	94
Clusters of Galaxies at High Redshift	
B. Fort	102
PARALLEL WORKSHOP 1: CLUSTERS OF GALAXIES AT HIGH REDSHIFT	
<i>Edited by Bernard Fort and Piero Rosati</i>	
OPTICAL/IR STUDIES OF GALAXY CLUSTERS	
Galaxy Populations In High Redshift Clusters	
S.A. Stanford	115
One of the Highest Redshift X-Ray Selected Clusters of Galaxies	
I. Lehmann, G. Hasinger, R. Giacconi, J.E. Gunn, M. Schmidt, D.P. Schneider, T. Stanke, J. Trümper, J. Wambsganss, D. Woods, G. Zamorani	121
Intracluster Planetary Nebulae	
M. Arnaboldi, M. Capaccioli, H. Ford, K.C. Freeman, R. Kudritzki, O. Gerhard, R. Méndez	126
GRAVITATIONAL LENSING AND CLUSTER DYNAMICS	
Probing Distant Galaxies with Lensing Clusters	
R. Pelló	131
Gravitational Redshift and Cluster Masses	
T. Broadhurst, E. Scannapieco	138
Velocity Dispersion Analysis of CNOC Clusters	
S. Borgani	143

X-RAY, RADIO, SZ STUDIES OF CLUSTERS

**A Sunyaev-Zel'dovich Effect Survey
for High Redshift Clusters**

J.J. Mohr, J.E. Carlstrom, G.P. Holder, W.L. Holzapfel,
M.K. Joy, E.M. Leitch, E.D. Reese 150

**Probing the Large-Scale Structure
with the REFLEX Cluster Survey**

H. Böhringer, L. Guzzo, C.A. Collins, P. Schuecker,
S. Schindler, W. Voges, D.M. Neumann, R. Cruddace,
S. DeGrandi, G. Chincarini, T.H. Reiprich, A.C. Edge,
H.T. MacGillivray, P. Shaver 157

**The Cluster Population in a Complete Sample
of Optically Identified RASS X-Ray Sources**

I. Appenzeller, R. Kneer, F.-J. Zickgraf, J. Krautter,
I. Thiering 164

ICM PHYSICS

The Metal Enrichment History of Clusters of Galaxies

A. Renzini 168

**The Connection of X-Ray Clusters of Galaxies
with the Early Star Formation Histories**

N. Menci, A. Cavaliere 176

**The Connection Between X-Ray Clusters
and Star Formation**

P. Tozzi, C. Norman 180

Clustering at High Redshift

S. Cristiani 184

LSS, CLUSTERING AND WIDE FIELD SURVEYS

EIS – An Imaging Survey for VLT Science

L. da Costa 192

**The Space Missions WAXS/WFXT and SWIFT:
New Targets for the VLT**

G. Chincarini 198

The VST – VLT Survey Telescope

- M. Arnaboldi, M. Capaccioli, D. Mancini,
R. Scaramella, G. Sedmak, R. Kurz 204

**PARALLEL WORKSHOP 2:
STAR-WAY TO THE UNIVERSE**

Edited by Rolf Kudritzki and Luca Pasquini

KUEYEN: A Unique Machine for Stellar Studies

- L. Pasquini 211

DISTANCE INDICATORS

Improvement of Cepheids as Distance Indicators

- W.P. Gieren, P. Fouqué, J. Storm 217

Eclipsing Binaries as Precise Distance Indicators

- J.V. Clausen 225

**Magellanic Cloud Eclipsing Binaries:
Distances and Dimensions**

- J. Pritchard, V. Niemela 232

Blue Supergiants – Starway to Virgo and Fornax

- R.P. Kudritzki 236

**Extragalactic Planetary Nebulae
and What to Do with Them**

- R.H. Méndez 242

**Towards Understanding the Planetary Nebula
Luminosity Function**

- P. Marigo, A. Weiss, M.A.T. Groenewegen, L. Girardi 248

HII Galaxies as Cosmological Probes

- J. Melnick, R. Terlevich, E. Terlevich, F. Selman 252

The Hubble Constant from the Fornax Cluster Distance

- T. Richtler, G. Drenkhahn, M. Gómez, W. Seggewiss 259

Lunar Occultations, Setting the Stage for VLTI: The Case Study of CW-Leo (aka IRC+10216)	
H.U. Käußl, B. Stecklum, S. Richter, A. Richichi	264
 AGE INDICATORS	
Absolute Ages of Globular Clusters and the VLT	
F. Pont	269
 The Galactic Bulge: Prospects for the VLT	
R.M. Rich	275
 Globular Clusters In the Galactic Bulge	
S. Ortolani	281
 Studying the Stellar Populations of the Local Group with VLT	
E. Tolstoy	287
 Fine Structure of the Red Clump in Local Group Galaxies	
L. Girardi	294
 Old Stars in Dwarf Irregular Galaxies: WLM and NGC3109	
D. Minniti, M. Rejkuba, A.A. Zijlstra, M.V. Alonso, M. Gregg	298
 High Mass Class I Sources in M 17	
R. Chini, M. Nielbock, M. Jütte	303
 WR Stars in Star Forming Regions	
W. Schmutz, W.D. Vacca	307
 Supernova Rates	
E. Cappellaro, F. Patat	313
 ABUNDANCE INDICATORS	
 Massive Stars and Their Role in Spectra and Abundances of High Redshift Galaxies	
A. Maeder	317

**Low and Intermediate Mass Stars:
Learning Theory from Observations**

C. Chiosi 323

**Abundance Determinations in Massive Blue Stars
Within the Local Group**

A. Herrero, R.-P. Kudritzki, S.J. Smartt, K. Venn,
N. Przybilla, D.J. Lennon, J.K. McCarthy,
M.I. Monteverde 331

**Abundances in Sagittarius:
Present State and Perspectives for the Use of VLT**

P. Bonifacio 338

The Old Population of the Magellanic Clouds

M. Spite, V. Hill 345

The Deep Thick Disk as Seen by UVES

K. Fuhrmann 351

**Abundances of Intermediate/Low Mass Stars
in the Galactic Bulge**

B. Barbuy 357

Abundances and Kinematics of Halo Stars

P.E. Nissen 363

Tidal Tails Around Galactic Globular Clusters

G. Meylan, S. Leon, F. Combes 369

**PARALLEL WORKSHOP 3:
FROM EXTRASOLAR PLANETS
TO BROWN DWARFS**

Edited by Michel Mayor and Francesco Paresce

FORMATION AND EVOLUTION: THEORY

**Diversity of Planetary Systems:
Formation Scenarios and Unsolved Problems**

J.J. Lissauer, D.N.C. Lin 377

Solar Nebulae and Replenished Dust Disks with Planets	
P. Artymowicz	391
Evolution of Low-Mass Stars and Substellar Objects. Contribution to the Galactic Mass Budget	
G. Chabrier, I. Baraffe, F. Allard, P.H. Hauschildt	399
Extrasolar Giant Planets: Masses and Luminosities from In-Situ Formation Theories	
G. Wuchterl	408
FORMATION AND EVOLUTION: OBSERVATIONS	
Imaging Exosolar Dust Disks	
P. Kalas	415
The Stellar Mass Function	
F. Paresce	422
Aspects of the Substellar Mass Function	
G. Basri	429
Planetary Microlensing: Present Status and Long-Term Goals	
P.D. Sackett	436
Approaching the Deuterium Burning Limit in the σ Orionis Young Cluster	
M.R. Zapatero Osorio, V. Béjar, E.L. Martín, R. Rebolo, G. Basri	446
TECHNIQUES: INDIRECT DETECTIONS; ASTROMETRY AND TRANSITS	
From PTI to the Keck Interferometer	
G.T. van Belle	450
Astrometry with the VLT Interferometer	
A. Quirrenbach	462
PRIMA – The VLTI Dual Feed System	
A. Glindemann, S. Lévêque	468

High Precision Interferometry with the NPOI	
D. Mozurkewich	474
Extra-Solar Planets with GAIA	
M.G. Lattanzi, A. Sozzetti, A. Spagna	479
Searching for Planets with the Space Interferometry Mission	
S. Unwin	492
Extrasolar Planets Transits: Detection and Follow-Up	
J. Schneider	499
TECHNIQUES: DIRECT DETECTIONS	
2MASS Brown Dwarfs and a First Estimate of the Substellar Mass Function	
J. Liebert, I.N. Reid, J.D. Kirkpatrick, A. Burrows, J.E. Gizis, A. Burgasser, C.C. Dahn, D.G. Monet, R. Cutri, C. Beichman, M. Skrutskie	505
Brown Dwarfs in Open Clusters	
M.R. Zapatero Osorio	511
Adaptive Optics Imaging of Faint Companions: Test Case of MWC480	
L. Close, D. Potter, A. Tokunaga	518
Observations of Disks and Faint Companions with NAOS	
A.M. Lagrange, D. Mouillet	521
VISIR and the Detection of Exo-Planets	
P.-O. Lagage	528
The Darwin Space Interferometer	
A. Penny, A. Leger, R. Lurance, M. Fridlund	535
TECHNIQUES: RADIAL VELOCITY SEARCHES AND INTERFEROMETRIC DETECTIONS	
Radial Velocity Searches for Extra Solar Planets from Keck and McDonald Observatories	
A.P. Hatzes, W.D. Cochran	539

Extrasolar Planets in the Southern Hemisphere: The CORALIE Survey	
D. Queloz, M. Mayor, D. Naef, N. Santos, S. Udry, M. Burnet, B. Confino	548
Use of the 3.6 m Telescope at La Silla for Planetary Detection	
M. Kürster	556
Direct Observation of Hot Jupiters and Other Faint Companions with the VLTI	
V. Coudé du Foresto	560
Direct Detection of Hot Extrasolar Planets Using Differential Interferometry	
B. Lopez, R.G. Petrov	565
The CORALIE Planet-Search Sample	
S. Udry, M. Mayor, D. Queloz, D. Naef, N. Santos	571
The HARPS Project	
F. Pepe, M. Mayor, W. Benz, J.-L. Bertaux, J.-P. Sivan, D. Queloz, S. Udry	572
Author Index	573