

# Contents

## Preface

## Part I VLT Science Highlights

### VLT Science Highlights

|                         |   |
|-------------------------|---|
| Alvio Renzini . . . . . | 3 |
|-------------------------|---|

### Pushing the VLT Spectroscopy of Distant Galaxies to the Limits and

#### Future Prospects

|                          |    |
|--------------------------|----|
| Andrea Cimatti . . . . . | 15 |
|--------------------------|----|

### Pushing FORS to the Limit—A New Population of Faint Extended Ly $\alpha$

#### Emitters at $z \sim 3$

|  |    |
|--|----|
| Martin G. Haehnelt, Michael Rauch, Andrew Bunker, George Becker, Francine Marleau, James Graham, Stefano Cristiani, Matt J. Jarvis, Cedric Lacey, Simon Morris, Celine Peroux, Huub Röttgering, and Tom Theuns . . . . . | 23 |
|--|----|

### VIMOS Integral Field Spectroscopy of Gaseous Nebulae in Local Group

#### Dwarf Galaxies

|  |    |
|--|----|
| E.V. Held, M. Gullieuszik, I. Saviane, F. Sabbadin, Y. Momany, L. Rizzi, and F. Bresolin . . . . . | 27 |
|--|----|

### Near IR Integral Field Spectroscopy of a Nearby Starburst

|  |    |
|--|----|
| L. Vanzi, G. Cresci, J. Melnick, and E. Telles . . . . . | 29 |
|--|----|

### The ESO Large Programme “First Stars”

|  |    |
|--|----|
| P. Bonifacio, J. Andersen, S.M. Andrievsky, B. Barbuy, T.C. Beers, E. Caffau, R. Cayrel, E. Depagne, P. François, J.I. González Hernández, C.J. Hansen, F. Herwig, V. Hill, S.A. Korotin, H.-G. Ludwig, P. Molaro, B. Nordström, B. Plez, F. Primas, T. Sivarani, F. Spite, and M. Spite . . . . . | 31 |
|--|----|

|  |     |
|--|-----|
| <b>The Contribution of UVES@VLT to the New Era of QSO Absorption Line Studies</b>  |     |
| Valentina D'Odorico and Miroslava Dessauges-Zavadsky . . . . .   | 37  |
| <b>IMAGES: A Unique View of the Galaxy Mass Assembly Since <math>z = 1</math></b>  |     |
| M. Puech, F. Hammer, H. Flores, Y. Yang, and B. Neichel . . . . .  | 43  |
| <b>The Metallicity Evolution at High Redshift</b>  |     |
| R. Maiolino, T. Nagao, A. Grazian, F. Cocchia, and the Amaze Team . .  | 49  |
| <b>Near-IR Spectroscopy of Blue Supergiants</b>  |     |
| N. Przybilla, A. Seifahrt, K. Butler, M.F. Nieva, H.-U. Käufl, and<br>A. Kaufer . . . . .  | 55  |
| <b>Integral Field Spectroscopy of Protoplanetary Disks in Orion with VLT FLAMES</b>  |     |
| Y.G. Tsamis, J.R. Walsh, and D. Péquignot . . . . .  | 61  |
| <b>MAD@VLT: Deep into the Madding Crowd of Omega Centauri</b>  |     |
| G. Bono, A. Calamida, C.E. Corsi, P.B. Stetson, E. Marchetti,<br>P. Amico, P.G. Prada Moroni, I. Ferraro, G. Iannicola, M. Monelli,<br>R. Buonanno, F. Caputo, M. Dall'Ora, S. Degl'Innocenti,<br>S. D'Odorico, L.M. Freyhammer, D. Koester, M. Nonino,<br>A.M. Piersimoni, L. Pulone, and M. Romaniello . . . . . | 67  |
| <b>Chemical Evolution of the Galaxy and Supernova Yields after UVES</b>  |     |
| G. Israelian and P. Bonifacio . . . . .  | 73  |
| <b>Part II VLTI Science Highlights</b>   |     |
| <b>VLTI Science Highlights</b>   |     |
| Guy Perrin . . . . .   | 81  |
| <b>MIDI Sees Active Galactic Nuclei</b>  |     |
| W. Jaffe, D. Raban, K. Meisenheimer, K. Tristram, Ch. Leinert, and<br>H. Röttgering . . . . .  | 89  |
| <b>The Use of the VLTI for Studying the Asymmetric Mass Loss of Evolved Stars</b>  |     |
| Olivier Chesneau . . . . .   | 95  |
| <b>Mid-infrared Interferometric Observations of Young Circumstellar Discs</b>  |     |
| Th. Ratzka, Ch. Leinert, R. van Boekel, and A.A. Schegerer . . . . .   | 101 |

|  |     |
|--|-----|
| <b>VLTI-AMBER Observations of <math>\eta</math> Carinae with High Spatial Resolution and Spectral Resolutions of <math>\lambda/\Delta\lambda = 1500</math> and 12 000*</b>   |     |
| G. Weigelt, S. Kraus, T. Driebe, K.-H. Hofmann, F. Millour, R. Petrov,<br>D. Schertl, O. Chesneau, K. Davidson, A. Domiciano de Souza,<br>T. Gull, J.D. Hillier, F. Malbet, F. Rantakyrö, A. Richichi,<br>M. Schöller, and M. Wittkowski . . . . . | 107 |
| <b>Resolving the Inner Active Accretion Disk Around the Herbig Be Star MWC 147 with VLTI/MIDI + AMBER Spectro-interferometry</b>   |     |
| S. Kraus, Th. Preibisch, and K. Ohnaka . . . . .   | 113 |
| <b>Multi-epoch VLTI/MIDI Observations of the Carbon-rich Mira Star V Oph</b>   |     |
| K. Ohnaka, T. Driebe, G. Weigelt, and M. Wittkowski . . . . .  | 119 |
| <b>A Mid-infrared Interferometric Study of the Circumstellar Environment of Dusty OH/IR Stars with VLTI/MIDI</b>   |     |
| T. Driebe, K. Ohnaka, K. Murakawa, K.-H. Hofmann, D. Schertl,<br>G. Weigelt, T. Verhoelst, O. Chesneau, A. Domiciano de Souza,<br>D. Riechers, M. Schöller, and M. Wittkowski . . . . .  | 125 |
| <b>The Closest Dusty Cloud Ever Detected Around a R CrB Variable Star Using the VLTI/MIDI Instrument</b>   |     |
| I.C. Leão, P. de Laverny, O. Chesneau, D. Mékarnia, and<br>J.R. De Medeiros . . . . .  | 127 |
| <b>Part III Future VLT and VLTI Science Priorities</b>   |     |
| <b>A Twenty Year Science Vision for European Astronomy</b>   |     |
| Guy Monnet and Tim de Zeeuw . . . . .  | 133 |
| <b>Baryonic Acoustic Oscillations</b>  |     |
| Gavin Dalton . . . . .   | 141 |
| <b>Galaxy Formation and Evolution</b>  |     |
| J. Bergeron . . . . .  | 147 |
| <b>Exoplanets: The Road to Earth Twins</b>   |     |
| S. Udry, F. Pepe, C. Lovis, M. Mayor, the HARPS, and<br>ESPRESSO/CODEX Teams . . . . .   | 155 |
| <b>Next Generation Deep Redshift Surveys with the VLT</b>  |     |
| Olivier Le Fèvre . . . . .   | 163 |

|  |     |
|--|-----|
| <b>GUAIX: The UCM Group of Extragalactic Astrophysics and Astronomical Instrumentation</b>   |     |
| J. Gallego, N. Cardiel, S. Pascual, M.C. Eliche-Moral,<br>A. Castillo-Morales, R. Guzmán, A. Gil de Paz,<br>P.G. Pérez-González, J. Gorgas, J. Zamorano, and<br>GUAIX Team . . . . . | 169 |
| <b>VISTA Public Surveys and VLT followup</b>   |     |
| Will Sutherland . . . . .  | 171 |
| <b>Probing Dark Energy with Cosmological Redshift Surveys at the VLT</b>   |     |
| L. Guzzo and the VVDS Consortium . . . . .   | 177 |
| <b>The First Galaxies and Galaxy Clusters</b>  |     |
| Eelco van Kampen . . . . .   | 183 |
| <b>Narrow Band Surveys and the Epoch of Reionization</b>   |     |
| B.P. Venemans, R.G. McMahon, I.R. Parry, D.J. King,<br>J. Bland-Hawthorn, and A.J. Horton . . . . .  | 187 |
| <b>Stellar Archaeology and Galaxy Genesis: The Need for Large Area Multi-Object Spectrograph on 8 m-Class Telescopes</b>   |     |
| Mike J. Irwin and Geraint F. Lewis . . . . .   | 193 |
| <b>Near-field Cosmology with the VLT</b>   |     |
| Steffen Mieske and Helmut Jerjen . . . . .   | 199 |
| <b>Chemical Evolution of Local Group Galaxies</b>  |     |
| Gražina Tautvaišienė, Doug Geisler, and George Wallerstein . . . . .   | 205 |
| <b>The VLTI as a Tool to Study Eclipsing Binaries for an Improved Distance Scale</b>   |     |
| K. Shabun, A. Richichi, U. Munari, A. Siviero, and B. Paczynski . . . . .  | 211 |
| <b>Part IV VLT and VLTI Synergy with ELTs</b>  |     |
| <b>Status of the European ELT</b>  |     |
| Roberto Gilmozzi and Jason Spyromilio . . . . .  | 217 |
| <b>The Science Case for the European ELT</b>   |     |
| Isobel Hook . . . . .  | 225 |
| <b>GRB Afterglows in the ELT Era</b>   |     |
| David Alexander Kann and Sylvio Klose . . . . .  | 233 |
| <b>On the Way to an E-ELT Instrumentation Plan</b>   |     |
| Sandro D'Odorico, Mark Casali, and Vincenzo Mainieri . . . . .   | 235 |

**From ESPRESSO to CODEX**

|   |     |
|---|-----|
| J. Liske, L. Pasquini, P. Bonifacio, F. Bouchy, R.F. Carswell,<br>S. Cristiani, M. Dessauges, S. D'Odorico, V. D'Odorico,<br>A. Grazian, R. Garcia-Lopez, M. Haehnelt, G. Israelian, C. Lovis,<br>E. Martin, M. Mayor, P. Molinaro, M.T. Murphy, F. Pepe, D. Queloz,<br>R. Rebolo, S. Udry, E. Vanzella, M. Viel, T. Wiklind, M. Zapatero,<br>and S. Zucker . . . . . | 243 |
|---|-----|

**First Results of AQuEye, a Precursor ‘Quantum’ Instrument for the  
E-ELT**

|   |     |
|---|-----|
| C. Barbieri, G. Naletto, E. Verroi, C. Facchinetto, T. Occhipinti,<br>A. Di Paola, E. Giro, P. Zoccarato, G. Anzolin, M. D'Onofrio,<br>F. Tamburini, G. Bonanno, S. Billotta, C. Pernechele, P. Bolli,<br>V. Da Deppo, and S. Fornasier . . . . . | 249 |
|---|-----|

**The E-ELT: A Chance to Measure Cosmic Magnetic Fields**

|   |     |
|---|-----|
| K.G. Strassmeier and I.V. Ilyin . . . . . | 255 |
|---|-----|

**The Experience from VISIR and the Design of an ELT Mid-infrared  
Instrument**

|  |     |
|--|-----|
| E. Pantin, R. Siebenmorgen, H.U. Käufl, and M. Sterzik . . . . . | 261 |
|--|-----|

**HARMONI: A Narrow Field Near-infrared Integral Field Spectrograph  
for the E-ELT**

|   |     |
|---|-----|
| Matthias Tecza, Niranjan Thatte, Fraser Clarke, and David Freeman . . . . . | 267 |
|---|-----|

**Which Synergies Between LBT/LINC Nirvana and Future ELTs?**

|  |     |
|--|-----|
| L. Labadie, T.M. Herbst, S. Egner, M. Brix, and M. Kurtser . . . . . | 273 |
|--|-----|

**TMT Science and Instruments**

|   |     |
|---|-----|
| David Crampton, Luc Simard, and David Silva . . . . . | 279 |
|---|-----|

**Part V VLT Synergies with ALMA and JWST****The Atacama Large Millimeter/Submillimeter Array**

|                          |     |
|--------------------------|-----|
| Leonardo Testi . . . . . | 289 |
|--------------------------|-----|

**Observational Cosmology with the ELT and JWST**

|                             |     |
|-----------------------------|-----|
| Massimo Stiavelli . . . . . | 295 |
|-----------------------------|-----|

**Integral Field Spectroscopy of (U)LIRGs. From VLT to JWST**

|   |     |
|---|-----|
| L. Colina, S. Arribas, A. Bedregal, A. Monreal-Ibero, M. García-Marín,<br>A. Alonso-Herrero, and J. Alfonso . . . . . | 301 |
|---|-----|

## **Part VI Second Generation VLT and VLTI Instrument Programme**

### **VLT and VLTI Second Generation Instrument Overview and Resources**

|                         |     |
|-------------------------|-----|
| Alan Moorwood . . . . . | 309 |
|-------------------------|-----|

### **HAWK-I and Infrared Imaging on the VLT**

|   |     |
|---|-----|
| M. Casali, N. Ageorge, C. Alves de Oliveira, P. Biereichel, M. Casali,<br>B. Delabre, R. Dorn, R. Esteves, G. Finger, D. Gojak, G. Huster,<br>Y. Jung, F. Koch, M. Kiekebusch, M. Kissler-Patig, M. Le Louarn,<br>J.-L. Lizon, L. Mehrgan, A. Moorwood, J. Pirard, E. Pozna,<br>A. Silber, B. Sokar, and J. Stegmeier . . . . . | 315 |
|---|-----|

### **X-Shooter: A Medium-resolution, Wide-Band Spectrograph for the VLT**

|   |     |
|---|-----|
| L. Kaper, S. D'Odorico, F. Hammer, R. Pallavicini, P. Kjaergaard<br>Rasmussen, H. Dekker, P. Francois, P. Goldoni, I. Guinouard,<br>P.J. Groot, J. Hjorth, M. Horrobin, R. Navarro, F. Royer, P. Santin,<br>J. Vernet, and F. Zerbi . . . . . | 319 |
|---|-----|

### **KMOS and KMOS++**

|  |     |
|--|-----|
| Ray Sharples and KMOS Consortium . . . . . | 325 |
|--|-----|

### **New Science Opportunities Offered by MUSE**

|  |     |
|--|-----|
| R. Bacon, S. Bauer, S. Brau-Nogué, P. Caillier, L. Capoani, M. Carollo,<br>T. Contini, E. Daguisé, B. Delabre, S. Dreizler, J.P. Dubois,<br>M. Dupieux, J. Dupin, E. Emsellem, P. Ferruit, M. Francois,<br>M. Franx, G. Gallou, J. Gerssen, B. Guiderdoni, G. Hansali,<br>D. Hofmann, A. Jarno, A. Kelz, C. Koehler, W. Kollatschny,<br>J. Kosmalski, F. Laurent, S. Lilly, J. Lizon, M. Loupias,<br>C. Monstein, J. Moultaka, H. Nicklas, L. Parés, L. Pasquini,<br>A. Pecontal, R. Pello, C. Petit, A. Manescau, R. Reiss,<br>A. Remillieux, E. Renault, M. Roth, J. Schaye, M. Steinmetz,<br>S. Ströbele, R. Stuik, P. Weilbacher, L. Wisotzki, and<br>H. Wozniak . . . . . | 331 |
|--|-----|

### **SPHERE: A ‘Planet Finder’ Instrument for the VLT**

|  |     |
|--|-----|
| D. Mouillet, J.-L. Beuzit, M. Feldt, K. Dohlen, P. Puget, F. Wildi,<br>A. Boccaletti, T. Henning, C. Moutou, H.M. Schmid, M. Turatto,<br>S. Udry, F. Vakili, R. Waters, A. Baruffolo, J. Charton, R. Claudi,<br>T. Fusco, R. Gratton, N. Hubin, M. Kasper, M. Langlois, J. Pragt,<br>R. Roelfsema, and M. Saisse . . . . . | 337 |
|--|-----|

**Milli-arcsecond Astrophysics with VSI, the VLTI Spectro-imager in the ELT Era**

- F. Malbet, D. Buscher, G. Weigelt, P. Garcia, M. Gai, D. Lorenzetti,  
J. Surdej, J. Hron, R. Neuhäuser, P. Kern, L. Jocou, J.-P. Berger,  
O. Absil, U. Beckmann, L. Corcione, G. Duvert, M. Filho,  
P. Labeye, E. Le Coarer, G. Li Causi, J. Lima, K. Perraut,  
E. Tatulli, E. Thiébaut, J. Young, G. Zins, A. Amorim, B. Aringer,  
T. Beckert, M. Benisty, X. Bonfils, A. Chelli, O. Chesneau,  
A. Chiavassa, R. Corradi, M. de Becker, A. Delboulbé,  
G. Duchêne, T. Forveille, C. Haniff, E. Herwats, K.-H. Hofmann,  
J.-B. Le Bouquin, S. Ligori, D. Loreggia, A. Marconi,  
A. Moitinho, B. Nisini, P.-O. Petrucci, J. Rebordao, R. Speziali,  
L. Testi, and F. Vitali . . . . . 343

**Prospects for Near-infrared Characterisation of Hot Jupiters with the VLTI Spectro-imager (VSI)**

- S. Renard, O. Absil, J.-P. Berger, X. Bonfils, T. Forveille, and  
F. Malbet . . . . . 349

**MATISSE**

- B. Lopez, S. Lagarde, S. Wolf, W. Jaffe, G. Weigelt, P. Antonelli,  
P. Abraham, J.-Ch. Augereau, U. Beckman, J. Behrend,  
N. Berruyer, Y. Bresson, O. Chesneau, J.M. Clausse, C. Connott,  
W.C. Danchi, M. Delbo, K. Demyk, A. Domiciano, M. Dugué,  
A. Glazeborg, U. Graser, H. Hanenburg, Th. Henning,  
M. Heininger, K.-H. Hofmann, Y. Hugues, S. Jankov, S. Kraus,  
W. Laun, Ch. Leinert, H. Linz, A. Matter, Ph. Mathias,  
K. Meisenheimer, J.-L. Menut, F. Millour, L. Mosoni,  
U. Neumann, A. Niedzielski, E. Nussbaum, R. Petrov, Th. Ratzka,  
S. Robbe-Dubois, A. Roussel, D. Schertl, F.-X. Schmider,  
B. Stecklum, E. Thiebaut, F. Vakili, K. Wagner, L.B.F.M. Waters,  
O. Absil, J. Hron, A. Matter, N. Nardetto, J. Olofsson, B. Valat,  
M. Vannier, B. Goldman, D. Schertl, S. Höning, and W.D. Cotton . . 353

**MATISSE Science Cases**

- S. Wolf, B. Lopez, W. Jaffe, G. Weigelt, J.-Ch. Augereau, N. Berruyer,  
O. Chesneau, W.C. Danchi, M. Delbo, K. Demyk, A. Domiciano,  
Th. Henning, K.-H. Hofmann, S. Kraus, Ch. Leinert, H. Linz,  
Ph. Mathias, K. Meisenheimer, J.-L. Menut, F. Millour, L. Mosoni,  
A. Niedzielski, R. Petrov, Th. Ratzka, B. Stecklum, E. Thiebaut,  
F. Vakili, L.B.F.M. Waters, O. Absil, J. Hron, S. Lagarde,  
A. Matter, N. Nardetto, J. Olofsson, B. Valat, M. Vannier, and  
MATISSE Science team . . . . . 359

|  |     |
|--|-----|
| <b>GRAVITY: Microarcsecond Astrometry and Deep Interferometric Imaging with the VLT</b>  |     |
| F. Eisenhauer, G. Perrin, W. Brandner, C. Straubmeier, A. Böhm,<br>H. Baumeister, F. Cassaing, Y. Clénet, K. Dodds-Eden, A. Eckart,<br>E. Gendron, R. Genzel, S. Gillessen, A. Gräter, C. Gueriau,<br>N. Hamaus, X. Haubois, M. Haug, T. Henning, S. Hippel,<br>R. Hofmann, F. Hormuth, K. Houairi, S. Kellner, P. Kervella,<br>R. Klein, J. Kolmeyer, W. Laun, P. Léna, R. Lenzen, M. Marteaud,<br>V. Naranjo, U. Neumann, T. Paumard, S. Rabien, J.R. Ramos,<br>J.M. Reess, R.-R. Rohloff, D. Rouan, G. Rousset, B. Ruyet,<br>A. Sevin, M. Thiel, J. Ziegleder, and D. Ziegler . . . . . | 361 |
| <b>Part VII New Instrument Concepts and VLT/I Operating Modes</b>  |     |
| <b>Smart Focal Plane Technologies for VLT Instruments</b>  |     |
| C.R. Cunningham and C.J. Evans . . . . .   | 369 |
| <b>Applications of Digital Micromirror Devices to Astronomical Instrumentation</b>   |     |
| M. Robberto . . . . .  | 375 |
| <b>FORS in the Era of Second Generation VLT Instrumentation</b>  |     |
| Kieran O'Brien . . . . .   | 377 |
| <b>Wide Field Options on the VLT</b>   |     |
| Stephen Todd . . . . .   | 379 |
| <b>A Few Degrees Very Wide Field of View Camera for VLT as a Finder for ELT</b>  |     |
| Roberto Ragazzoni, Jacopo Farinato, Emiliano Diolaiti, Giorgia Gentile, Carmelo Arcidiacono, Renato Falomo, and Emanuele Giallongo . . . . .   | 385 |
| <b>Science with a 16 m VLT: The Case for Variability of Fundamental Constants</b>  |     |
| Paolo Molaro . . . . .   | 389 |
| <b>ESPRESSO: A High Resolution Spectrograph for the Combined Coudé Focus of the VLT</b>  |     |
| Luca Pasquini, A. Manescu, G. Avila, B. Delabre, H. Dekker, J. Liske, S. D'Odorico, F. Pepe, M. Dessauges, C. Lovis, D. Megevand, D. Queloz, S. Udry, S. Cristiani, P. Bonifacio, P. Dimarco, V. D'Odorico, P. Molaro, E. Vanzella, M. Viel, M. Haehnelt, B. Carswell, M. Murphy, R. Garcia-Lopez, J.M. Herreros, J. Perez, M.R. Zapatero, R. Rebolo, G. Israelian, E. Martin, F. Zerbi, P. Spanò, S. Levshakov, N. Santos, and S. Zucker . . . . .  | 395 |

|  |     |
|--|-----|
| <b>Feeding Optics for the ESPRESSO Spectrograph</b>  |     |
| G. Avila, P. Dimarcantonio, and F. Zerbi . . . . .   | 401 |
| <b>New Design Approach for a Very-High Resolution Spectrograph for the VLT Combined Focus</b>  |     |
| Paolo Spanò and Hans Dekker . . . . .  | 403 |
| <b>ESPRESSO Optomechanics</b>  |     |
| J. Pérez, H. Dekker, R.J. García López, J.M. Herreros, R. López,<br>F. Pepe, J.L. Rasilla, P. Spanò, and M.R. Zapatero Osorio . . . . .                              | 405 |
| <b>ESPRESSO Science Software</b>   |     |
| D. Mégevand, V. D'Odorico, and C. Lovis . . . . .  | 409 |
| <b>High Resolution Wavelength Calibration: Advancements with the Laser Frequency Comb Development</b>  |     |
| A. Manescau, C. Araujo-Hauck, L. Pasquini, M.T. Murphy, Th. Udem,<br>T.W. Hänsch, R. Holzwarth, A. Sizmann, H. Dekker, and<br>S. D'Odorico . . . . .                 | 411 |
| <b>Precision Radial Velocities in the Infrared</b>   |     |
| Hugh R.A. Jones, John Rayer, Larry Ramsey, Bill Dent,<br>Andy Longmore, Bill Vacca, Mike Liu, Adrian Webster,<br>Alex Wolczan, and John Barnes . . . . .             | 415 |
| <b>Very Large Spectroscopic Surveys with the VLT</b>   |     |
| I.R. Parry . . . . .   | 417 |
| <b>New Developments in Integral Field Spectroscopy</b>   |     |
| Anthony Horton, Joss Bland-Hawthorn, and Simon Ellis . . . . .   | 423 |
| <b>ULTRAPHOT</b>   |     |
| Françoise Roques, Isabelle Guinouard, Jean-Tristan Buey,<br>Alain Doressoundiram, David Horville, and Michel Marteaud . . .  | 429 |
| <b>Super-GIRAFFE: The Next Generation High Multiplex Optical Spectrograph with d-IFUs</b>  |     |
| M.D. Lehnert, I. Guinouard, D. Horville, P. Jagourel, F. Chemla,<br>J.-P. Amans, P. Bonifacio, C. Babusiaux, F. Hammer, V. Hill,<br>F. Royer, and M. Puech . . . . . | 431 |
| <b>FLEX (The First Light Explorer)—The Science Case for a Fully OH Suppressed IFU Spectrograph</b>   |     |
| Simon Ellis, Joss Bland-Hawthorn, Anthony Horton, and<br>Roger Haynes . . . . .  | 437 |
| <b>An N-Band Integral Field Spectrometer Survey Instrument for the VLT</b>   |     |
| A.C.H. Glasse, D.M. Henry, and D. Lee . . . . .  | 443 |

|   |     |
|---|-----|
| <b>High Resolution Visible Imaging on the VLT</b>   |     |
| Craig Mackay . . . . .  | 449 |
| <b>Life on the Fast Lane: The Burst Mode at the VLT at Present and in the Future</b>  |     |
| Andrea Richichi, Octavi Fors, Elena Mason, Marco Delbó,<br>Jörg Stegmaier, and Gert Finger . . . . .                          | 455 |
| <b>High Resolution Near Infrared Spectroscopy: Prospects for 10 and 40 m Class Telescopes</b>                                 |     |
| E. Oliva and L. Origlia . . . . .   | 461 |
| <b>Prospects and Needs of Micro-arcsecond Astrometry</b>  |     |
| Andreas Seifahrt, Tristan Röll, and Ralph Neuhäuser . . . . .   | 469 |
| <b>CASIS: Cassegrain Adaptive-Optics Simultaneous Imaging System for the VLT</b>  |     |
| M. Kissler-Patig, M. Casali, B. Delabre, N. Hubin, H.U. Käufl, P. Jolley,<br>M. Le Louarn, S. Oberti, and J. Pirard . . . . . | 475 |
| <b>The Need for a General Purpose Diffraction Limited Imager at the VLT</b>   |     |
| Thomas Ott, Richard Davies, Frank Eisenhauer, Reinhard Genzel,<br>Reiner Hofmann, and Stefan Gillessen . . . . .              | 481 |
| <b>Exploring the Time Axis—High Resolution Timing Observations with Present and Future Instrumentation</b>                    |     |
| V.D. Ivanov, C. Caceres, E. Mason, D. Naef, F. Selman, C. Melo,<br>D. Minniti, and G. Pietrzynski . . . . .                   | 487 |
| <b>Advanced Calibration for Quantitative Astrophysics: 2nd Generation VLT Instruments and Beyond</b>                          |     |
| Florian Kerber, Paul Bristow, and Michael R. Rosa . . . . .   | 493 |
| <b>Quantitative Near-IR Spectroscopy of OB Stars</b>  |     |
| M.F. Nieva, N. Przybilla, A. Seifahrt, K. Butler, H.U. Käufl, and<br>A. Kaufer . . . . .                                      | 499 |
| <b>The Very Large Telescope Interferometer in the ELT Era</b>   |     |
| M. Schöller, F. Delplancke, A. Glindemann, and A. Richichi . . . . .  | 501 |
| <b>VLTI and Beyond: The Next Steps in AGN Research with Interferometers</b>   |     |
| Klaus Meisenheimer . . . . .  | 507 |