

Table of Contents

Preface	ix
Organizing committee	xi
Conference photograph	xii
Conference participants	xiii

1. Atmospheres of Massive Stars

Massive Stars as Cosmic Engines Through the Ages	3
<i>A. Maeder, G. Meynet, S. Ekström, R. Hirschi, & C. Georgy</i>	
X-ray Emission from O Stars	17
<i>D. H. Cohen</i>	
Physical and Wind Properties of OB-Stars	25
<i>J. Puls</i>	
The Metallicity Dependence of the Mass Loss of Early-Type Massive Stars	39
<i>A. de Koter</i>	
Properties of Wolf-Rayet Stars	47
<i>P. A. Crowther</i>	
Wolf-Rayet Wind Models from Hydrodynamic Model Atmospheres	63
<i>G. Gräfener & W.-R. Hamann</i>	
Luminous Blue Variables & Mass Loss near the Eddington Limit.....	71
<i>S. Owocki & A.-J. van Marle</i>	
Pulsation-Initiated Mass Loss in Luminous Blue Variables: A Parameter Study .	83
<i>A. J. Onifer & J. A. Guzik</i>	
What Do We Really Know About the Winds of Massive Stars?	89
<i>D. J. Hillier</i>	
The Physical Properties of Red Supergiants: Comparing Theory and Observations	97
<i>P. Massey, E. M. Levesque, B. Plez, & K. A. G. Olsen</i>	
The Evolutionary State of the Cool Hypergiants – Episodic Mass Loss, Convective Activity and Magnetic Fields	111
<i>R. M. Humphreys</i>	
Massive Binaries.....	119
<i>A. F. J. Moffat</i>	
3-D SPH Simulations of Colliding Winds in η Carinae	133
<i>A. T. Okazaki, S. P. Owocki, C. M. P. Russell, & M. F. Corcoran</i>	
The First Determination of the Rotation Rates of Wolf-Rayet Stars	139
<i>A-N. Chené & N. St-Louis</i>	

2. Physics and Evolution of Massive Stars

Developments in Physics of Massive Stars	147
<i>G. Meynet, S. Ekström, A. Maeder, R. Hirschi, C. Georgy, & C. Beffa</i>	
Can Pulsational Instabilities Impact a Massive Star's Rotational Evolution?	161
<i>R. Townsend & J. MacDonald</i>	
Rotation and Massive Close Binary Evolution	167
<i>N. Langer, M. Cantiello, S.-C. Yoon, I. Hunter, I. Brott, D. Lennon, S. de Mink, & M. Verheijdt</i>	
The Effect of Massive Binaries on Stellar Populations and Supernova Progenitors	179
<i>J. J. Eldridge, R. G. Izzard, & C. A. Tout</i>	
Thoughts on Core-Collapse Supernova Theory	185
<i>A. Burrows, L. Dessart, C. D. Ott, E. Livne, & J. Murphy</i>	
Episodic Mass Loss and Pre-SN Circumstellar Envelopes	193
<i>N. Smith</i>	
The Progenitor Stars of Core-Collapse Supernovae	201
<i>S. J. Smartt, R. M. Crockett, J. J. Eldridge, & J. R. Maund</i>	
Can Very Massive Stars Avoid Pair-Instability Supernovae?	209
<i>S. Ekström, G. Meynet, & A. Maeder</i>	
Stellar Evolution at Low Metallicity	217
<i>R. Hirschi, C. Chiappini, G. Meynet, A. Maeder, & S. Ekström</i>	
Evolution of Progenitor Stars of Type Ibc Supernovae and Long Gamma-Ray Bursts	231
<i>S.-C. Yoon, N. Langer, M. Cantiello, S. E. Woosley, & G. A. Glatzmaier</i>	
Core Overshoot and Nonrigid Internal Rotation of Massive Stars: Current Status from Asteroseismology	237
<i>C. Aerts</i>	

3. Massive Star Populations in the Nearby Universe

Young Massive Clusters	247
<i>D. F. Figer</i>	
Massive Stars in the Galactic Center	257
<i>F. Martins, D. J. Hillier, R. Genzel, F. Eisenhauer, T. Ott, S. Gillessen, & S. Trippe</i>	
Metallicity Studies in the IR: Unveiling Obscured Clusters of Our Galaxy	265
<i>F. Najarro</i>	
Massive Stars in the Nuclei and Arms of Spirals	273
<i>F. Bresolin</i>	
UCHII Regions and Newly Born O-type Stars	285
<i>P. S. Conti, J. Rho, J. Furness, & P. A. Crowther</i>	

<i>Contents</i>	vii
Binary Populations and Stellar Dynamics in Young Clusters..... <i>D. Vanbeveren, H. Belkus, J. Van Bever, & N. Mennekens</i>	293
Westerlund 1 as a Template for Massive Star Evolution	301
<i>I. Negueruela, J. S. Clark, L. J. Hadfield, & P. A. Crowther</i>	
One Hundred 30 Dors?	307
<i>M. Hanson & B. Popescu</i>	
Extragalactic Stellar Astronomy with the Brightest Stars in the Universe..... <i>R. Kudritzki, M. A. Urbaneja, F. Bresolin, & N. Przybilla</i>	313
VLT/FORS Surveys of Wolf-Rayet Stars in the Nearby Universe	327
<i>L. J. Hadfield & P. A. Crowther</i>	
LBT Discovery of a Yellow Supergiant Eclipsing Binary in the Dwarf Galaxy Holmberg IX	333
<i>J. L. Prieto, K. Z. Stanek, C. S. Kochanek, & D. R. Weisz</i>	
4. Hydrodynamics and Feedback from Massive Stars in Galaxy Evolution	
Bubbles and Superbubbles: Observations and Theory	341
<i>Y.-H. Chu</i>	
The Evolution of the Circumstellar and Interstellar Medium Around Massive Stars	355
<i>S. J. Arthur</i>	
Infrared Tracers of Mass-Loss Histories and Wind-ISM Interactions in Hot Star Nebulae..... <i>P. Morris & the Spitzer WRRINGS team</i>	361
Stellar Feedback Through Cosmic Time: Starbursts & Superwinds.....	367
<i>M. A. Dopita</i>	
Gemini/IFU Observations of Galactic Outflows in Starburst Galaxies..... <i>L. J. Smith & M. S. Westmoquette</i>	379
Radiative Feedback in Galaxies	385
<i>M. S. Oey, E. S. Voges, R. A. M. Walterbos, G. R. Meurer, S. Yelda, & E. Furst</i>	
The Role of Massive Stars in Galactic Chemical Evolution	391
<i>F. Matteucci</i>	
Detailed Nucleosynthesis Yields from the Explosion of Massive Stars..... <i>C. Fröhlich, T. Fischer, M. Liebendörfer, F.-K. Thielemann, & J. W. Truran</i>	401
Evidence for a Mass Outflow from Our Galactic Center..... <i>C. Law</i>	407
Part 5. Massive Stars as Probes of the Early Universe	
Massive Stars at High Redshifts..... <i>M. Pettini</i>	415

Star Forming Galaxies at $z > 5$	429
<i>Y. Taniguchi</i>	
Core-Collapse Supernovae as Dust Producers	437
<i>R. Kotak</i>	
GRBs as Probes of Massive Stars Near and Far	443
<i>J. P. U. Fynbo & D. Malesani</i>	
Probing the Interstellar Medium and Stellar Environments of Long-Duration GRBs	457
<i>M. Dessauges-Zavadsky, J. X. Prochaska, & H.-W. Chen</i>	
The Connection between Gamma-Ray Bursts and Extremely Metal-Poor Stars as Nucleosynthetic Probes of the Early Universe	463
<i>K. Nomoto, N. Tominaga, M. Tanaka, K. Maeda, & H. Umeda</i>	
The First Stars	471
<i>J. L. Johnson, T. H. Greif, & V. Bromm</i>	
Imprint of First Stars Era in the Cosmic Infrared Background Fluctuations	483
<i>A. Kashlinsky</i>	
Imaging and Spectroscopy with the James Webb Space Telescope	491
<i>G. Sonneborn</i>	
The Impact of Extremely Large Telescopes on the Study of the Most Luminous Stellar Objects	495
<i>S. D'Odorico</i>	
Metallicities at the Sites of Nearby SN and Implications for the SN-GRB Connection	503
<i>M. Modjaz, L. Kewley, R. P. Kirshner, K. Z. Stanek, P. Challis, P. M. Garnavich, J. E. Greene, P. L. Kelly, & J. L. Prieto</i>	
Abstracts of additional oral talks	509
6. Conclusion	
Symposium Summary	513
<i>C. Leitherer</i>	
7. Posters	
Poster Abstracts	525
<i>F. Bresolin, P. A. Crowther, & J. Puls</i>	
8. Reports on Special Sessions	
Evolution of Massive Stars at Low Metallicity	571
<i>G. Meynet, N. R. Walborn, I. Hunter, C. Martayan, A. J. van Marle, S. Marchenko, J. S. Vink, M. Limongi, E. M. Levesque, & M. Modjaz</i>	
Magnetic Massive Stars	577
<i>R. Townsend, D. H. Cohen, L. Dessart, S. Hubrig, Y. Nazé, V. Petit, A. ud-Doula, & N. R. Walborn</i>	
Author index	587