

TABLE OF CONTENTS

Preface	xiii
List of Figures	xix
List of Participants	xxi

I. FUNDAMENTALS OF THE HR DIAGRAM

W.W. MORGAN / Some Uses of Spectral Classification in HR Diagrams	3
NOLAN R. WALBORN / Some Progress and Problems in the Upper Left of the HR Diagram	5
PHILIP C. KEENAN / A More Accurate HR Diagram for the Cooler Stars	13
PATRICIA C. BOESHAAR / Spectroscopic Observations of Late-Type Halo M Dwarfs	21
I. APPENZELLER and H. ZEKL / A Computer Method for Spectral Classification	23
M. PARTHASARATHY / Red and Blue Stars in the Direction of the Large Magellanic Cloud	25
TH. SCHMIDT-KALER / Quantitative Two-Dimensional Classifications of Low Dispersion Objective Prism Spectra	29
V.M. BLANCO, A.A. HOAG, and M.F. McCARTHY / Carbon and Late-Type M Stars as Population Indicators	33
ARTHUR R. UPGREN / Main Sequences Defined by Hyades and Field Stars	39
ANDRÉ HECK / Absolute Magnitudes by Statistical Parallaxes	49
S.V.M. CLUBE and J.A. DAWE / RR Lyrae Variable Stars and the Distance Scale	53
ROBERT E. STENCEL / Extensions of the Wilson-Bappu Effect Among Very Luminous Stars	59
WILLEM J. LUYTEN / Statistical HR Diagrams for One Hundred and Fifteen Thousand Proper-Motion Stars	63
D.S. HAYES / The Absolute Calibration of the HR Diagram: Fundamental Effective Temperatures and Bolometric Corrections	65

II. HR DIAGRAMS, THE SOLAR NEIGHBORHOOD

W. GLIESE / Hertzsprung-Russell Diagrams and Color-Luminosity	
---	--

Diagrams for the Stars Nearer than Twenty-Two Parsecs	79
DON C. BARRY / The Position of the Sun in the HR Diagram	89
NANCY HOUK and ROBERT FESEN / HR Diagrams Derived from the Michigan Spectral Catalogue	91

III. HR DIAGRAMS, SUBLUMINOUS STARS

JESSE L. GREENSTEIN / The HR Diagram	101
HARRY L. SHIPMAN / The Distribution of Masses and Radii of White Dwarf Stars	117
VOLKER WEIDEMANN / The HR Diagram of White Dwarfs	121
PAUL R. WESSELIUS / Ultraviolet Colors of Subdwarf O Stars	125
C.C. DAHN and R.S. HARRINGTON / Subluminous Stars in the HR Diagram	129
S. TAPIA / Empirical Evidence for Crystallization Sequences of DA Type White Dwarfs	133

IV. HR DIAGRAMS, CLUSTERS

A. GUTIÉRREZ-MORENO and H. MORENO / Spectrophotometry in Stellar Associations	139
WILLIAM HERBST and ROBERT J. HAVLEN / A Photometric Study of Ara OB1	143
D.L. CRAWFORD / Four-Color and H β Diagrams for Open Clusters - A Survey	145
R.F. GARRISON / The Main Sequence of NGC 6231 and the Calibration of Absolute Magnitudes	147
PHILLIP J. FLOWER / The Hyades Cluster - Too Distant?	151
HELMUT A. ABT and HUGO LEVATO / The Occurrence of Peculiar Stars in Open Clusters	155
CATHERINE A. PILACHOWSKI and WALTER K. BONSACK / The Clump Giants: A Spectroscopic Survey of G and K Giants in Open Clusters	157
RICHARD C. HENRY and JAMES E. HESSER / K-Line Photometry: Coma and NGC 6475	161
ALAN HIRSHFELD, ROBERT D. MCCLURE, and BRUCE A. TWAROG / Measurements of Abundances and Ages of Old Disk Clusters	163
ROBERT P. KRAFT / Evidence for Non-Homogeneity in the Metal Abundances of Stars in Globular Clusters	167

M. SPITE and F. SPITE / A Comparison Between the Relative Heavy Metal Abundance of the Extreme Halo Field Stars and Giant Stars of Globular Clusters	169
GEORGE WALLERSTEIN and CATHERINE PILACHOWSKI / Observations of CO and OI in Stars in Globular Clusters	173
R. CANTERNA and R.A. SCHOMMER / The Chemical Abundances of the Halo Clusters of the Galaxy	177
DENNIS BUTLER, ROGER A. BELL, R.J. DICKENS, and ELIZABETH EPPS / A Combined Photometric/Spectroscopic Study of RR Lyrae Stars in the Globular Cluster Omega Centauri	183
JOHN NORRIS / The Role of Mixing and Primordial Abundance Variations in 47 Tucanae and ω Centauri	195
T. LLOYD EVANS / The Anomalous Giant Branch of ω Centauri	205

V. HR DIAGRAMS, HORIZONTAL BRANCH

A.G. DAVIS PHILIP / Horizontal-Branch Stars in the Log T_{eff} , Log G Diagram	209
VITTORIO CASTELLANI / The Expected Morphology of Zero Age Horizontal Branches	221
F. FUSI-PECCI and A. RENZINI / Evolution of Globular Cluster Stars with Mass Loss and Core Rotation	225
J.W. PEL and J. LUB / Physical Properties of Cepheids and RR Lyrae Stars	229
ARTHUR N. COX and STEPHEN W. HODSON / Pulsation Modal Behavior of Classical Cepheids in the HR Diagram	237
L.A. BALONA / The Radii of RR Lyrae Stars	241

VI. GALAXIES AND MISCELLANEOUS SUBJECTS

BEATRICE M. TINSLEY / HR Diagrams of Galaxies: Ages and Stages of Evolution	247
DAVID CRAMPTON / Luminosities of LMC OB Stars	259
ROBERTA M. HUMPHREYS / The HR Diagram for Luminous Stars in Nearby Galaxies	263
ROBERT A. SCHOMMER, EDWARD W. OLSZEWSKI, and WILLIAM E. KUNKEL / A Preliminary Color-Magnitude Diagram for the Ursa Minor Dwarf Galaxy	269
SIDNEY VAN DEN BERGH / The Hertzsprung-Russell Diagram of Metal-Poor Disk Stars	273

M. GOLAY / The Use of Praesepe for the Definition of the Lower Part of the Zero-Age Main Sequence	277
DAVID S. EVANS / A New Kind of HR Diagram?	281
B. HAUCK / Detection of Am and Ap Stars by Photometric Means	285
EUGENIO E. MENDOZA V / The HR Diagram of Abnormal A-Type Stars	289
V. STRAIŽYS / From Multicolor Photometric Indices to the HR Diagram	293

VII. THEORETICAL PAPERS AND SUMMARY

HELMUTH KÄHLER / The Vogt-Russell Theorem, and New Results on an Old Problem	303
G. CAYREL DE STROBEL and M.N. PERRIN / Comparison Between Observational and Theoretical ($\log T_{\text{eff}}$, M_{bol}) Diagrams	313
M.N. PERRIN and G. CAYREL DE STROBEL / Is it Possible to Derive the Position of a Star in the HR Diagram from Multicolor Photometry?	319
PETER G. GROSS / On Magnetic Mixing and Rotation in Stellar Evolution	323
ALLEN V. SWEIGART / Survey of Some Recent Stellar-Evolution Calculations	333
R.B. CIARDULLO and P. DEMARQUE / The Evolution of the Integrated Colors of Globular Clusters and Elliptical Galaxies	345
SUSAN A. LAMB / Evolution of Massive Stars Through Late Evolutionary Phases	349
C. CHIOSI / The Structure and Evolution of Massive Stars	357
PETER S. CONTI / Evolution of Massive Stars: When Does an Of Star Become a WR Star?	369
DAVID S.P. DEARBORN and VIRGINIA TRIMBLE / Nucleosynthesis in Massive Population II Stars	375
R.A. BELL and B. GUSTAFSSON / The Colors of G and K Giant Stars	379
R. FOY / Microturbulence as a Third Dimension in the G-K Giant Region of the HR Diagram	383
KEIICHI KODAIRA / Sphericity Effects of Extended Atmospheres of Late-Type Giants in the HR Diagram	387
LOUIS C. GREEN / Summary	391
Continuation of Discussion	405

POSTER SESSION

THOMAS B. AKE / A Revised Classification System in the Red for S Stars	409
H.J. AUGENSEN and W. BUSCOMBE / Southern High-Velocity Stars	413
WILLIAM P. BIDELMAN / On G.P. Kuiper's Work on the Stars of Large Proper Motion	417
I. FURENLID and W.L. SANDERS / A B-Star High Luminosity Indicator	421
JOHANNES HARDORP / The Main Sequence at G2 V	423
WILLIAM HERBST, RENE RACINE, and JOHN W. WARNER / Optical and Infrared Properties of the Newly Formed Stars in CMa R1	427
KEIICHI ISHIDA and TAKAO MIKAMI / Luminosity Calibration of Late-Type Stars by Statistical Parallax using AGK3 Proper Motions	429
H.E. JØRGENSEN / Fundamental Parameters and the Helium Content of Eclipsing Spectroscopic Binaries	433
JAMES LIEBERT / Extending the White Dwarf Sequence: Plans and Prospects	437
BERNARD J. McNAMARA and W.L. SANDERS / Peculiarities in Some Cluster Color-Magnitude Diagrams	441
LAWRENCE J. RELYEAE and A.G. DAVIS PHILIP / The Strömgren Four-Color System and the Log T_{eff} , Log G Diagram	443
NATHANIEL M. WHITE / Angular Diameters of Cool Stars Measured by the Method of Lunar Occultations	447
ROBERT F. WING and NATHANIEL M. WHITE / Two-Dimensional Spectral Classification of M Stars by Narrow-Band Photometry	451
Index	455