



# Galaxy Distances and Deviations from Universal Expansion

edited by Barry F. Madore and R. Brent Tully

NATO ASI Series

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Series C: Mathematical and Physical Sciences Vol. 180

# Galaxy Distances And Deviations From Universal Expansion

**J. P. Ostriker**



## Galaxy Distances And Deviations From Universal Expansion:

**Galaxy Distances and Deviations from Universal Expansion** Barry F. Madore, R. Brent Tully, 2012-12-06 It was a general feeling among those who attended the NATO ARW meeting on the Galaxy Distances and Deviations from Universal Expansion that during the week in Hawaii a milestone had been passed in work on the distance scale While not until the last minute did most of the participants know who else would be attending no one was displeased with the showing As it turned out scarcely a single active worker in the field of the distance scale missed the event Few knew all of the outstanding work that was to be revealed and or the long term programs that were to be encapsulated in the first few days Areas of general agreement were pinpointed with candid speed and most of the discussion moved on quickly to new data and areas deserving special new attention As quickly as one project was reported as being brought successfully to a close a different group would report on new discoveries with new directions to go New data new phenomena but the sentiment was that we were building on a much safer foundation even if the Universe was unfolding in a much more complex and unexpected way than was previously anticipated In editing these proceedings a decision was made well in advance of the Meeting that no attempt would be made to record the discussion This was done for many reasons

*A General Catalog of HI Observations of Galaxies* W.K. Huchtmeier, O.-G. Richter, 2013-03-09 A catalog of all published HI observations of external galaxies has been compiled Its construction is briefly described It contains almost 20 000 entries for over 10 000 galaxies based on more than 570 references Here the reference catalog is presented It contains the HI data basically just as they were originally published No numerical conversions were made and no error correction was attempted Contents Summary Introduction 1 I The Compiled Data 1 1 1 References Included 1 1 2 Description of the Catalog 1 3 Comments on Table I x 1 3 1 Galaxy Names x 1 3 2 Galaxy Coordinates XI 1 3 3 Masses XI 1 3 4 Codes Used XI 1 3 5 Telescopes XI 1 4 Auxiliary Information XII 2 Some Bibliographic and a Few Other Statistics XII 3 Concluding Remarks XII Acknowledgments XIII General References XIII Figures 1 8 xv The Tables Table 1 The Catalog I Table 2a List of HI References Ordered by Sequence Number 287 Table 2b List of HI References Ordered Alphabetically 298 Table 2c List of HI References Ordered by Publication Year 309 Table 3 References to Further HI Emission and Absorption Observations 320 Table 4 Discussions of Global Galaxy Parameters from HI Observations 322 Table 5 Discussions of the Tully Fisher Relation 323 Table 6 Catalogs Review Articles Popular Articles and Miscellaneous HI References 324 Table 7 Abstracts Published in Astron 1 and BIII A A S

*Astronomy and Astrophysics Abstracts* S. Böhme, U. Esser, H. Hefele, I. Heinrich, W. Hofmann, D. Krahn, V. R. Matas, L. D. Schmadel, G. Zech, 2013-12-14 From the reviews Astronomy and Astrophysics Abstracts has appeared in semi annual volumes since 1969 and it has already become one of the fundamental publications in the fields of astronomy astrophysics and neighbouring sciences It is the most important English language abstracting journal in the mentioned branches The abstracts are classified under more than hundred subject categories thus permitting a quick survey of the whole extended material The AAA is a

valuable and important publication for all students and scientists working in the fields of astronomy and related sciences As such it represents a necessary ingredient of any astronomical library all over the world Space Science Reviews 1 Dividing the whole field plus related subjects into 108 categories each work is numbered and most are accompanied by brief abstracts Fairly comprehensive cross referencing links relevant papers to more than one category and exhaustive author and subject indices are to be found at the back making the catalogues easy to use The series appears to be so complete in its coverage and always less than a year out of date that I shall certainly have to make a little more space on those shelves for future volumes The Observatory Magazine 1 *Observational Cosmology* Adelaide Hewitt, Geoffrey Burbidge, Li Zhi

Fang, 2012-12-06 The Symposium was held at the Great Wall Sheraton Hotel in Beijing China in the period August 25 30 1986 The decision to concentrate on the observational aspects of modern cosmology was taken in part because this conference has come in a period when there have been several international meetings on one aspect of modern cosmology namely the early universe and its possible relationship to particle physics While that approach is extremely exciting it has the disadvantage that its connection with much of observational cosmology is very indirect Thus there has been little opportunity to discuss critically the wealth of new data that are now becoming available which bear on the structure and evolution of the Universe but not always on its early history This Symposium was planned to cover all aspects of observational cosmology with only comparatively minor excursions into theory Nearly 200 participants attended from 21 countries A total of 26 invited papers and 73 contributed papers were given This meant that everyone worked hard and long from 9 A M to about 5 30 P M for five of the six days of the conference In addition to oral contributions space was made available for poster papers and 56 of these were available for study for the duration of the conference From The Planck Scale To The Weak Scale: Toward A Theory Of The Universe - Proceedings Of The Theoretical Advanced Study Institute In Elementary Particle Physics (In 2 Volumes)

Howard E Haber, 1987-10-31 The attempt to understand the nature of particle physics at the weak scale is the major goal of the current generation of collider facilities Theorists attempt to stretch their theories to the Planck scale and beyond with the very ambitious theory of superstrings Particle physics at all energy scales has important implications for the theory of the Early Universe Lectures on Standard Model Grand Unification and Supersymmetry and the present status of string and superstring theory are given by both theorists and experimentalists in a complete and pedagogical manner Finally lectures notes on the Early Universe galaxy formation and high energy colliders are directed specifically at particle physicists

Development of Large Scale Structure in the Universe J. P. Ostriker, 1991 This book considers modern and fascinating theories of the large scale models of the universe **Examining the Big Bang and Diffuse Background Radiations**

Menas Kafatos, Y. Kondo, 2012-12-06 IAU Symposium No 168 Examining the Big Bang and Diffuse Background Radiations took place on August 23 26 1994 at the XXIIInd IAU General Assembly in the Hague Netherlands The meeting attracted a large number over 250 of astronomers reflecting the strong interest engendered by the great advances in cosmology made in

recent years There is still a multitude of unresolved problems in modern cosmology and the symposium offered a wonderful occasion to examine them objectively at a place where many leading workers in related fields gathered together After the introduction by IAU President L Woltjer and the historical background by Vice Present Virginia Trimble the volume begins with reviews of the cosmic microwave radiation from COBE Cosmic Background Explorer Reviews of recent observations then extend from radio to infrared visible light ultraviolet X rays and gamma rays It is followed by theoretical models for the Big Bang and Inflation and alternative views to the Big Bang Following a discourse on Probes and Future Tests the meeting ended with a Panel Discussion on Major Unsolved Problems of Cosmology Some forty four contributed papers both oral and poster reports are included after the invited talks and panel discussions

**Large Scale Structure and Motions in the Universe** Marino Mezzetti, G. Giuricin, F. Mardirossian, M. Ramella, 2012-12-06 The 1980 s have been times of great excitement in Astrophysics and Cosmology Professors Dennis Sciama and Fabio Mardirossian and all the other Members of the Organizing Committees are to be congratulated for having given us a taste of this excitement in Trieste by inviting the leaders of the subject to the meeting they have organized The excitement has come from the new observations of the three dimensional structure of the universe through a large number of new measurements of redshifts These have revealed that clusters of galaxies are distributed on the surface of big empty bubbles of diameters of the order of 20 50 Mpc Additionally there is some evidence for invisible dark matter whose composition is not known as well as evidence for the gravitational lens effect To cap this has come the supernova of 1987 an event which last occurred 383 years ago For the first time in history the neutrino flux from the supernova was measured giving limits to neutrino masses and numbers of neutrino types The dark matter problem is related to Particle Physics beyond this standard model It is good to be alive when all this happens and to try to comprehend this Once again our appreciation to the organisers and to those who presented their beautiful results

**Supernovae** Albert G. Petschek, 2012-12-06 For millennia mankind has watched as the heavens move in their stately progression from night to night and from year to year presaging with their changes the changing seasons The sun the moon and the planets move in what appears to be an unchanging firmament except occasionally when a new star appears Among the new stars there are comets novae and finally supernovae the subject of this book Superstitious mankind regarded these events as significant portents and recorded them carefully so that we have records of supernovae that may reach back as far as 1300 B C Clark and Stephenson 1977 Murdin and Murdin 1985 The Cygnus Loop believed to be a 15 000 year old supernova remnant at a distance of only 800 pc Chevalier and Seward 1988 must have awed our ancestors Tycho s supernova of 1572 at a distance of 2500 pc had a magnitude of 4.0 comparable to Venus at its brightest and Kepler s supernova of 1604 had a magnitude of 3 or so Thus the Cygnus Loop supernova might have had a magnitude of 6 or so and should have been readily visible in daytime A supernova in Vela about 8000 B C was comparably close as was SN 1006 whose magnitude may have been 9 While most of the supernova records come from the Old World the supernova of 1054 is

recorded in at least one petroglyph in the American West **Astrophysical Ages and Dating Methods** Elisabeth Vangioni-Flam,1990 Gauge Theory and the Early Universe P. Galeotti,David N. Schramm,2012-12-06 Proceedings of the NATO Advanced Study Institute Erice Italy May 20 30 1986 Molecular Mechanisms for Sensory Signals Edward M. Kosower,2017-03-14 Pursuing the questions of how we learn and how memory is made Edward Kosower introduces a novel and rich approach to connecting molecular properties with the biological properties that enable us to write and read to create culture and ethics and to think Here he examines what happens within a single cell in reaction to external stimuli and shows the parallels between single cell and multicellular responses To address the problem of learning Kosower explains the molecular mechanisms of responses to input from taste olfactory and visual receptors He then shows how these and other processes serve as the basis for memory This study covers such signals for the molecular process of learning as pheromones the molecular signals mediating behavior light activates the G protein receptor rhodopsin and acetylcholine opens the nicotinic acetylcholine receptor Kosower s discussion of the structure and function of these complex molecules has direct implications for such areas as molecular neurobiology bioorganic chemistry and drug design in elucidating approaches to the structure of drug targets Originally published in 1991 The Princeton Legacy Library uses the latest print on demand technology to again make available previously out of print books from the distinguished backlist of Princeton University Press These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905 **Physical Processes in Fragmentation and Star Formation** Roberto Capuzzo-Dolcetta,C. Chiosi,Alberto Di Fazio,2012-12-06 Recent years have witnessed the expansion and multiplication of the observations of star formation and fragmentation accompanied by a consequent growth in the study of the underlying physical processes the chemistry the sites the times etc Moreover recent studies have shown that the formation of stars is likely to share many features with the formation of other self gravitating objects The present volume therefore discusses the formation of such objects in a systematic and comparative manner

**Current Topics In Astrofundamental Physics - Proceedings Of The 2nd Course In The International School Of Astrophysics "D Chalonge"** Normalized Sanchez,Antonino Zichichi,1993-08-27 A biography of the author s background which provides insight into his training in medicine and his opinions on the concepts and training that are necessary to be a good doctor The aims of this book are to first show how coronary angioplasty was pioneered in Australia Singapore and China Second it is to illustrate the founding of a long awaited medical school in Xiamen China where the author s ancestors originate Third it is to describe the reformation of healthcare cardiology medical research and Art academy in Singapore Fourth it is to demonstrate the vision and realization of the third Asia Pacific cardiovascular intervention block Last but not least this book describes the merging of East West culture medicine art and a personal Christian testimony This book hopes

to show that with hard work determination and vision any young man or woman should be able to write a similar life story of their own It is particularly important for young doctors to learn how not to bring grief but goodness to their patients and relatives This book also illustrates the history of the development of coronary intervention in China and the rise of the Asia Pacific region in this field Finally this book provides a unique personal perspective in the convergence of Eastern and Western culture medicine and art

**Cosmological Dark Matter - Proceedings Of The International School** Jose W F Valle,A Perez,1994-08-31 This volume treats various facets of the dark matter problem Its themes include astronomical data galaxy rotation curves dynamics of galaxy clusters microlensing of stars in the Large Magellanic Cloud particle physics nonbaryonic dark matter neutrinos and computer simulation of the evolution of large scale structure in the universe Solar neutrinos and prospects for their detection through underground experiments are also discussed The book will provide a useful reference for all those interested in astroparticle physics

*Nearly Normal Galaxies* Sandra M. Faber,2012-12-06 It is sometimes said that astronomy is the crossroads of physics In the same spirit it can forcefully be argued that galaxies are the crossroads of astronomy Internal processes within galaxies involve all of the fundamental components of astrophysics stellar evolution star formation low density astrophysics dynamics hydrodynamics and high energy astrophysics Indeed one can hardly name an observational datum in any wavelength range on any kind of celestial object that does not provide a useful clue to galaxy formation and evolution Although internal processes in galaxies until recently occupied most of our attention we now know that it is also vital to relate galaxies to their environment How galaxies congregate in larger structures and are in turn influenced by them are crucial questions for galactic evolution On a grander level we have also come to regard galaxies as the basic building blocks of the universe the basic units whereby the large scale structure of the universe is apprehended and quantified On a grander level still we also believe strongly that galaxies are the direct descendents of early density irregularities in the Big Bang Galaxy properties are now viewed as providing a crucial constraint on the physics of the Big Bang and a vital link between the macroscopic and microscopic structure of the universe

[Information & On-Line Data in Astronomy](#) D Egret,M.A Albrecht,2012-12-06 The ability of storing managing and giving access to the huge quantity of data collected by astronomical observatories is one of the major challenges of modern astronomy At the same time the growing complexity of data systems implies a change of concepts the scientist has to manipulate data as well as information Recent developments of the WorldWideWeb bring interesting answers to these problems The book presents a wide selection of databases archives data centers and information systems Clear and up to date descriptions are included together with their scientific context and motivations Audience This volume provides an essential tool for astronomers librarians data specialists and computer engineers

**Chemical Evolution of Galaxies** Francesca Matteucci,2012-01-05 The term chemical evolution of galaxies refers to the evolution of abundances of chemical species in galaxies which is due to nuclear processes occurring in stars and to gas flows into and out of galaxies This book deals with the chemical evolution of galaxies

of all morphological types ellipticals spirals and irregulars and stresses the importance of the star formation histories in determining the properties of stellar populations in different galaxies The topic is approached in a didactical and logical manner via galaxy evolution models which are compared with observational results obtained in the last two decades The reader is given an introduction to the concept of chemical abundances and learns about the main stellar populations in our Galaxy as well as about the classification of galaxy types and their main observables In the core of the book the construction and solution of chemical evolution models are discussed in detail followed by descriptions and interpretations of observations of the chemical evolution of the Milky Way spheroidal galaxies irregular galaxies and of cosmic chemical evolution The aim of this book is to provide an introduction to students as well as to amend our present ideas in research the book also summarizes the efforts made by authors in the past several years in order to further future research in the field     High Redshift and Primeval Galaxies Jacqueline Bergeron,1987     *The Analysis of Starlight* John B. Hearnshaw,2014-03-17 First published in 1986 this is the story of the analysis of starlight by astronomical spectroscopy Beginning with Joseph Fraunhofer's discovery of spectral lines in the early nineteenth century this new edition continues the story through to the year 2000 In addition to the key discoveries it presents the cultural and social history of stellar astrophysics by introducing the leading astronomers and their struggles triumphs and disagreements Basic concepts in spectroscopy and spectral analysis are included so both observational and theoretical aspects are described in a non mathematical framework This new edition covers the final decades of the twentieth century with its major advances in stellar astrophysics the discovery of extrasolar planets new classes of stars and the observation of the ultraviolet spectra of stars from satellites The in depth coverage makes it essential reading for graduate students working in stellar spectroscopy professional and amateur astronomers and historians of science



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