



HOLLAND C. FORD

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Professional Highlights

Ford is the Principal Investigator for the HST Advanced Camera for Surveys, one of Hubble's most successful cameras. Ford and G. Illingworth (ACS Deputy PI) oversaw and coordinated an international team of ~ 50 astronomers, students, and support staff that analyzed HST ACS observations and supporting X-ray and ground-based imaging and spectroscopy. To date, the team has published more than 111 refereed papers with more than 7,000 citations. Comparison of citations to ACS papers to all astronomy and astrophysics papers and to all HST papers published from 01/01/2003 to 07/26/2011 shows that ACS had a high impact on astronomy. The five most cited ACS papers are in the top 0.5% percentile of 199,971 astronomy and astrophysics papers, and in the top 1.8% percentile of 2906 HST papers.

Ford and R. Brown organized and co-chaired the *HST* Strategy Panel, "A Strategy for Recovery," that recommended to NASA how to correct the crippling spherical aberration found in Hubble's primary mirror after launch. One of the Strategy Panel's key recommendations was to build an instrument called COSTAR that would correct the spherical aberration for Hubble's FOS and GHRS spectrographs and the European Faint Object Camera. Ford was the project scientist for COSTAR, and, with the Project Engineer Jim Crocker, oversaw the design and implementation of this highly successful instrument that was installed in Hubble during the first servicing mission. COSTAR restored the design performance of the spectrographs and the European camera, and helped restore NASA's reputation and national pride.

Ford was a Co-Investigator on the Hubble Space Telescope (HST) Faint Object Spectrograph, which Ford used for the first confirmation of a massive black hole in the center of a galaxy.

Ford has more than thirty years of teaching experience as a professor at UCLA, the University of Michigan, and the Johns Hopkins University. Ford's former students and Postdoctoral Fellows are now professors and researchers at institutions around the world.

Education

B.S. in Mathematics (and Physics) (*With Special Distinction*) 1962, Univ. of Oklahoma,
(Honors: Phi Eta Sigma, Sigma Pi Sigma, Pi Mu Epsilon, and Phi Beta Kappa)
Ph.D. in Astronomy (1970), University of Wisconsin, (Honors: Phi Kappa Phi)

Positions

2011—present, Research Professor, The Johns Hopkins University
1993—1999 Director, Center for Astrophysical Sciences, Johns Hopkins University
1993, Acting Deputy Director, Space Telescope Science Institute
1988—2011, Professor, The Johns Hopkins University
1988, Professor, University of Michigan
1982—1994, Astronomer, Space Telescope Science Institute
1978—1982, Professor, University of California, Los Angeles
1975—1978, Associate Professor, University of California, Los Angeles
1971—1975, Assistant Professor, University of California, Los Angeles

Awards and Memberships

1992, NASA Exceptional Scientific Achievement Award
1994, NASA Public Service Medal, “in recognition of outstanding contributions to NASA and the world's astronomers for leadership in the development of the Corrective Optics Space Telescope Axial Replacement (COSTAR) instrument.”
1994, NASA Group Achievement Award, (COSTAR Instrument)
1994, Space Telescope Science Institute Achievement Award (COSTAR Instrument)
Fellow, American Association for the Advancement of Science
International Academy of Astronautics “The Laurels for Team Award The Hubble Space Telescope Team”
Member International Astronomical Union, Commissions 28, 34, and 47

Selected Publications

Authored and co-authored 267 publications that have more than 18,000 citations. The papers include:

Ford, H. C., Jenner, D. C., Epps, H. W. 1973, “*Planetary Nebulae in Local-Group Galaxies. I. Identifications in NGC 185, NGC 205, and NGC 221*”, ApJ, 183L, 73
Ford, H. C., Jacoby, G., and Jenner, D. C. 1977, “*Planetary nebulae in local group galaxies. IV - Identifications, positions, and radial velocities of nebulae in NGC 147 and NGC 185*,” ApJ, 213, 18
Ford, H. C. Jacoby, G. H. 1978, *Planetary nebulae in local group galaxies. V – The Andromeda Galaxy*, ApJ, 219, 437”, ApJ, 219, 437
Ford, H. C. and Butcher, H. 1979, “*The system of filaments in M87 - Evidence for matter falling into an active nucleus*”, ApJS, 41 147
Ford, H. C., Crane, P. C., Jacoby, G. H., Lawrie, D. G., and van der Hulst, J. M., 1985 “*Bubbles and jets in the center of M51*”, ApJ, 293, 1321
Ford, H. C., Dahari, O., Jacoby, G. H., Crane, P. C., and Ciardullo, R. 1986, “*Bubbles and braided jets in galaxies with compact radio nuclei*”
Ciardullo, R., Ford, H. C., Neill, J. D., Jacoby, G. H., and Shafter, A. W. 1987, “*The spatial distribution and population of novae in M31*”, ApJ, 318, 520

- Ciardullo, R. Jacoby, G. H., Ford, H. C. and Neill, J. D. 1989, “*Planetary nebulae as standard candles. II - The calibration in M31 and its companions*”, ApJ, 339, 53
- Jacoby, G. H., Ciardullo, R., and Ford, H. C. 1990, “*Planetary nebulae as standard candles. V - The distance to the Virgo Cluster*”, ApJ, 356, 332
- Ford, H.C. et al. 1994, “*Narrow Band HST Images of M87: Evidence for a Disk of Ionized Gas Around a Massive Black Hole*,” ApJ, **435**, L27.
- Harms, R.J., & Ford, H.C. et al. 1994, “*HST FOS Spectroscopy of M87: Evidence for a Disk of Ionized Gas Around a Massive Black Hole*,” ApJ, **435**, L35.
- Hui, X., Ford, H. C., Freeman, K. C., and Dopita, M. A. 1995, “*The Planetary Nebula System and Dynamics of NGC 5128. III. Kinematics and Halo Mass Distributions*”, ApJ, 449, 592
- Ferrarese, L., Ford, H.C., and Jaffe, W. 1996, “*Evidence for a Massive Black Hole in the Active Galaxy NGC 4261 from Hubble Space Telescope Images and Spectra*”, ApJ, 470, 444.
- Ford, H.C., Tsvetanov, Z., Ferrarese, L., Kriss, G., Jaffe, W., Harms, R., and Dressel, L. 1997, “*Gaseous Disks in the Nuclei of Elliptical Galaxies in Accretion Phenomena and Related Outflows*,” IAU colloquium 163, ed. D. T. Wickramasinghe, G. V. Bicknell, and L. Ferrario (ASP Conference Series)
- Ferrarese, L., and Ford, H.C. 1999, “*Nuclear Disks of Gas and Dust in Early-Type Galaxies and the Hunt for Massive Black Holes: Hubble Space Telescope Observations of NGC 6251*”, ApJ, 515, 583.
- Ford, H.C., Peng, E., and Freeman, K. 2002, *Extragalactic Planetary Nebulae*, in The Dynamics, Structure and History of Galaxies, eds. G. Da Costa and H. Jerjen, ASP Conf. Series, Vol. 273, 41
- Sparks, W.B. and Ford, H.C., 2002, “*Imaging Spectroscopy for Extrasolar Planet Detection*,” ApJ, 578, 543.
- Ford, H.C. et al. 2003, “*Overview of the Advanced Camera for Surveys On-orbit Performance*,” Proc. SPIE, Vol. 4854, 81.
- Zheng, W., Ford, H. C., et al. 2003, PRIME: “*Probing the Very Early Universe, in IR Space Telescopes and Instruments*,” Ed.: John C. Mather, SPIE, 4850, 1132.
- Martel, A.R., Ford, H.C., et al. 2003, “*Coronagraphic Imaging of 3C 273 with the Advanced Camera for Surveys*”, AJ, 125, 2964.
- Ford, H.C. et al. 2004, “*The Evolutionary Status of Clusters of Galaxies at $z \sim 1$* ”, in “*Penetrating Bars through Masks of Cosmic Dust: the Hubble Tuning Fork Strikes a New Note*”, eds. D.L. Block, K.C. Freeman, I. Puerari & R. Groess (ASSL, 319, 459F)
- Ferrarese, L., and Ford, H.C. 2005, “*Supermassive Black Holes In Galactic Nuclei: Past, Present And Future Research*”, (invited review) SSRv, 116, 523
- Ford, H.C., Bhatti, W., Hebb, L., Petro, L., Richmond, M., and Rogers, J 2008, *Detecting Transits in Sparsely Sampled Surveys*, AIPC, 1082, 275
- Hebb, L., Petro, L., Ford, H. C., Ardila, D. R., Toledo, I. Minniti, D., Golimowski, D. A., Clampin, Mark 2007, “*A search for planets transiting the M-dwarf debris disc host, AU Microscopii*”, MNRAS, 379, 63
- Bouwens, R. J., Illingworth, G. D., Franx, M., and Ford, H. C. 2007, “*UV Luminosity*

- Functions at $z \sim 4, 5,$ and 6 from the Hubble Ultra Deep Field and Other Deep Hubble Space Telescope ACS Fields: Evolution and Star Formation History*", ApJ, 670, 928
- Bouwens, R. J., Illingworth, G. D., Franx, M., and Ford, H. C. 2008, *$z \sim 7-10$ Galaxies in the HUDF and GOODS Fields: UV Luminosity Functions*, ApJ, 686, 230
- Bradley, L. D., Bouwens, R. J., Ford, H. C., Illingworth, G. D., et al. 2008, "Discovery of a Very Bright Strongly Lensed Galaxy Candidate at $z \sim 7.6$ ", ApJ, 678, 647
- Zitrin, A., Broadhurst, T., Coe, D., Liesenborgs, J., Benítez, N., Rephaeli, Y., Ford, H., and Umetsu, K. 2011, "Strong-lensing analysis of MS 1358.4+6245: New multiple images and implications for the well-resolved $z = 4.92$ galaxy", MNRAS, 413, 1753
- Zheng, W., Postman, M., Zitrin, A., Moustakas, J., Shu, X., Jouvel, S., Høst, O., Molino, A., Bradley, L., Coe, D., and 26 coauthors, 2012 "A magnified young galaxy from about 500 million years after the Big Bang", Nature, 489, 406
- Zitrin, A.; Meneghetti, M.; Umetsu, K.; Broadhurst, T.; Bartelmann, M.; Bouwens, R.; Bradley, L.; Carrasco, M.; Coe, D.; Ford, H.; and 14 coauthors 2013, "CLASH: The Enhanced Lensing Efficiency of the Highly Elongated Merging Cluster MACS J0416.1-2403", ApJ, 762, 30