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Project Title:

"Photometry of Galactic and Extragalactic Far-Infrared Sources Using the 91.5cm Airborne Infrared Telescope."

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Under this grant, we have constructed a series of far infrared photometers, cameras, and supporting systems and used these instruments for astronomical observation with the Kuiper Airborne Observatory. These observations have included studies of galaxies, star formation regions, and objects within the Solar System. We have also supported many guest investigators who have used our instruments for additional observations on the KAO.

These studies are described in the papers listed in the attached bibliography.

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C.A.S.I.

D. A. Harper

BIBLIOGRAPHY

1971

Harper, D. A., and Low, F. J. 1971, Ap. J. (Letters), **165**, L9. "Far Infrared Emission from H II Regions."

1972

Harper, D. A., Jr., Low, F. J., Rieke, G. H., and Armstrong, K. R. 1972, Ap. J. (Letters), **177**, L21. "Observations of Planets, Nebulae, and Galaxies at 350 Microns."

Armstrong, K. R., Harper, D. A., Jr., and Low, F. J. 1972, Ap. J. (Letters), **178**, L89. "Far-Infrared Brightness Temperatures of the Planets."

1973

Harper, D. A., Jr., and Low, F. J. 1973, Ap. J. (Letters), **182**, L89. "Far-Infrared Observations of Galactic Nuclei."

Rieke, G. H., Harper, D. A., Low, F. J., and Armstrong, K. R. 1973, Ap. J. (Letters), **183**, L67. "350-Micron Observations of Sources in H II Regions, the Galactic Center, and NGC 253."

1974

Harper, D. A. 1974, Ap. J., **192**, 557. "Far Infrared Emission from H II Regions. II. Multicolor Photometry of Selected Sources and 2.62 Resolution Maps of M47 and NGC 2024."

Harper, D. A. 1974, in H II Regions and Related Topics, ed. T. L. Wilson and D. Downes (Berlin: Springer-Verlag), p. 343. "Far Infrared Emission from H II Regions."

1976

Telesco, C. M., Harper, D. A., and Loewenstein, R. F. 1976, Ap. J. (Letters), **203**, L53. "Far-Infrared Photometry of NGC 1068."

Harper, D. A., Hildebrand, R. H., Stiening, R., and Winston, R. 1976, Applied Optics, **15**, 53. "Heat Trap: An Optimized Far Infrared Field Optics System."

Werner, M. W., Gatley, I., Harper, D. A., Becklin, E. E., Loewenstein, R. F., Telesco, C. M., and Thronson, H. A. 1976, Ap. J., **204**, 420. "One Arc-Minute Resolution Maps of the Orion Nebula at 20, 50, and 100 Microns."

Harper, D. A., Low, F. J., Rieke, G. H., and Thronson, H. A., Jr. 1976, Ap. J., **205**, 136. "Infrared Observations of M17."

Harper, D. A. 1976, in IAU Comm. 44 Report 16A (Dordrecht: Reidel), pp. 210-213. "Infrared Space Astronomy."

1977

- Telesco, C. M., and Harper, D. A. 1977, Ap. J., **211**, 475. "Far-Infrared Observations of NGC 7027."
- Loewenstein, R. F., Harper, D. A., Moseley, S. H., Telesco, C., Thronson, H. A., Jr., Hildebrand, R. H., Whitcomb, S. E., Winston, R., and Stiening, R. F. 1977, Icarus, **31**, 315. "Far-Infrared and Submillimeter Observations of the Planets."
- Harper, D. A. 1977, in Infrared and Submillimeter Astronomy, ed. G. G. Fazio (Dordrecht: Reidel), pp. 169-170. "Infrared Observations from an Airborne Platform."
- Hildebrand, R. H., Whitcomb, S. E., Winston, R., Stiening, R. F., Harper, D. A., and Moseley, S. H. 1977, Ap. J., **216**, 698. "Submillimeter Photometry of Extragalactic Objects."
- Loewenstein, R. F., Harper, D. A., and Moseley, H. 1977, Ap. J. (Letters), **218**, L145. "The Effective Temperature of Neptune."

1978

- Hildebrand, R. H., Whitcomb, S. E., Winston, R., Stiening, R. F., Harper, D. A., and Moseley, S. H. 1978, Ap. J. (Letters), **219**, L101. "Submillimeter Observations of the Galactic Center."
- Rieke, G. H., Telesco, C. M., and Harper, D. A. 1978, Ap. J., **220**, 556. "The Infrared Emission of the Galactic Center."
- Gatley, I., Becklin, E. E., Werner, M. W., and Harper, D. A. 1978, Ap. J., **220**, 822. "Far-Infrared Observations of H II Regions near the Galactic Center."
- Kleinmann, S. G., Sargent, D. G., Moseley, H., Harper, D. A., Loewenstein, R. F., Telesco, C. M., and Thronson, H. A., Jr. 1978, Astr. Ap., **65**, 139. "Far-Infrared Observations of Sources Associated with Double-Lobed Reflection Nebulae."
- Thronson, H. A., Jr., Harper, D. A., Keene, J., Loewenstein, R. F., Moseley, H., and Telesco, C. M. 1978, A. J., **83**, 492. "Observations of Five Moderate-Luminosity Far-Infrared Sources in Orion and Monoceros."
- Whitcomb, S. E., Hildebrand, R. H., Keene, J., Stiening, R. F., and Harper, D. A. 1978, Icarus, **38**, 75. "Submillimeter Brightness Temperatures of Venus, Jupiter, Uranus, and Neptune."

1979

- Thronson, H. A., Jr., and Harper, D. A. 1979, Ap. J., **230**, 133.
- Wright, E. L., Harper, D. A., Hildebrand, R. H., Keene, J., and Whitcomb, S. E. 1979, Nature, **279**, 703. "Millimeter and Submillimeter Measurements of the Crab Nebula."

1980

- Loewenstein, R. F., Harper, D. A., Jr., Moseley, S. H., Shaya, E., and Smith, J. 1980, Icarus, **43**, 283. "Far-Infrared Observations of Titan and Iapetus."

Telesco, C. M., and Harper, D. A. 1980, Ap. J., **235**, 392. "Galaxies and Far-Infrared Emission."

Keene, J., Harper, D. A., Jr., Hildebrand, R. H., and Whitcomb, S. E. 1980, Ap. J. (Letters), **240**, L43. "Far-Infrared Observations of the Globule B335."

Wright, E. L., Harper, D. A., Jr., Loewenstein, R. F., Keene, J., and Whitcomb, S. E. 1980, Ap. J. (Letters), **240**, L157.

Werner, M. W., Becklin, E. E., Gatley, I., Neugebauer, G., Sellgren, K., Thronson, H. A., Jr., Harper, D. A., Jr., Loewenstein, R. F., and Moseley, S. H. 1980, Ap. J., **242**, 601. "High Angular Resolution Far-Infrared Observations of the W3 Region."

Wright, E. L., Harper, D. A., Loewenstein, R. F., and Moseley, S. H. 1980, Ap. J., **246**, 426. "Far-Infrared Observations of the H₂O Masers in NGC 281, NGC 2175, and S255/257."

1981

Harper, D. A., and Moseley, S. H. 1981, Rev. Sci. Instrum., **52**, 487. "A Low Thermal Conductance Rigidizer for Reducing Torsional Oscillations in Cryogenic Dewars."

Lada, C. J., Thronson, H. A., Jr., Smith, H. A., Harper, D. A., Keene, J., Loewenstein, R. F., and Smith, J. 1981, Ap. J. (Letters), **251**, L91. "Far-Infrared and Submillimeter Observations of Barnard 35: Heat Sources for Bright-Rimmed Molecular Clouds."

1982

Smith, H. A., Thronson, H. A., Jr., Lada, C. J., Harper, D. A., Loewenstein, R. F., and Smith, J. 1982, Ap. J., **258**, 170. "Far-Infrared Observations of FU Orionis."

1983

Schwartz, P. R., Thronson, H. A., Jr., Lada, C. J., Smith, H. A., Glaccum, W., Harper, D. A., and Knowles, S. H. 1983, Ap. J., **271**, 625. "Far-Infrared and Submillimeter Observations of Stellar Radiative and Wind Heating in S140 IRS."

Clegg, P. E., Gear, W. K., Ade, P. A. R., Robson, E. I., Smith, M. G., Nolt, I. G., Radostitz, J. V., Glaccum, W., Harper, D. A., and Low, J. F. 1983, Ap. J., **273**, 58. "Millimeter and Submillimeter Observations of 3C 273."

Smith, H. A., Lada, C. J., Thronson, H. A., Harper, D. A., Glaccum, W., Loewenstein, R. F., and Smith, J. 1983, Ap. J., **274**, 571. "Far-Infrared Observations of the Type 1 Seyfert Galaxy NGC 4051."

Keene, Jocelyn, Davidson, J., Harper, D. A., Hildebrand, R. H., Jaffe, D. T., Loewenstein, R. F., Low, F. J., and Pernic, R. 1983, Ap. J. (Letters), **274**, L43. "Far-Infrared Detection of Low-Luminosity Star Formation in the Bok Globule B335."

1984

- Thronson, H. A., Jr., Lada, C. J., Schwartz, P. R., Smith, H. A., Smith, J., Glaccum, W., Harper, D. A., and Loewenstein, R. F. 1984, Ap. J., **280**, 154. "NGC 2024: Far-Infrared and Radio Molecular Observations."
- Jaffe, D. T., Hildebrand, R. H., Keene, Jocelyn, Harper, D. A., Loewenstein, R. F., and Moran, J. M. 1984, Ap. J., **281**, 225. "Far-Infrared Selected Star Formation Regions."
- Telesco, C. M., Becklin, E. E., Wynn-Williams, C. G., and Harper, D. A. 1984, Ap. J., **282**, 427. "A Luminous 3 Kiloparsec Infrared Disk in NGC 1068."
- Thronson, H. A., Jr., Schwartz, P. R., Smith, A., Lada, J., Glaccum, W., and Harper, D. A. 1984, Ap. J., **284**, 597. "W3 North: Far-Infrared and Radio Molecular Observations."
- Harper, D. A., Loewenstein, R. F., and Davidson, J. A. 1984, Ap. J., **285**, 808. "On the Nature of the Material Surrounding Vega."
- Harper, D. A. 1984, in Proc. of the 1984 NASA/ASP Symposium on Airborne Astronomy, p. 247. "Far-Infrared Emission from Galaxies."
- Loewenstein, R. F., Harper, D. A., Hildebrand, R. H., Keene, J., Orton, G. S., and Whitcomb, S. E. 1984, in Proc. of the 1984 NASA/ASP Symposium on Airborne Astronomy (NASA CP-2353), p. 81. "Far-Infrared and Submillimeter Observations of the Giant Planets."
- Smith, J., Harper, D. A., and Loewenstein, R. F. 1984, in Proc. of the 1984 NASA/ASP Symposium on Airborne Astronomy, p. 277. "Dust Reradiation from NGC 6946."
- Thronson, H. A., Harper, D. A., Smith, H. A., Schwartz, P. R., Lada, C. J., Bally, J., Bieging, J. H., Greenhouse, M., and Loewenstein, R. F. 1984, in Proc. of the 1984 NASA/ASP Symposium on Airborne Astronomy, p. 127. "The Orion Molecular Cloud at Far-Infrared Wavelengths."
- Thronson, H. A., Jr., Lada, C. J., Smith, H. A., Glaccum, W., Harper, D. A., Loewenstein, R. F., and Smith, J. 1984, MNRAS, **207**, 659. "The Energetics and Mass Structure of S201."
- Hoffman, W. F., Fazio, G. G., and Harper, D. A. 1984, in Proc. SPIE Int. Soc. Opt. Eng., vol. 444, p. 53. "A Balloon-Borne Three-Meter Telescope for Far Infrared and Submillimeter Astronomy."

1985

- Hildebrand, R. H., Loewenstein, R. F., Harper, D. A., Orton, G. S., Keene, Jocelyn, and Whitcomb, S. E. 1985, Icarus, **64**, 64. "Far-Infrared and Submillimeter Brightness Temperatures of the Giant Planets."
- Hoffman, W. F., Fazio, G. G., and Harper, D. A. 1985, Adv. Space Res., vol. 5, no. 1, p. 117. "Design Study for a Three-Meter Balloon-Borne Telescope for Far-Infrared and Submillimeter Astronomy."

1986

- Thronson, H. A., Jr., and Harper, D. A. 1986, Ap. J., **300**, 396. "Far-Infrared Observations of Sagittarius B2: Reconsideration of Source Structure."

Hereld, M., and Harper, D. A. 1986, in Proc. SPIE Meeting on Astronomical Instrumentation, Tucson, 1986 March. "HgCdTe Focal Plane Arrays for Low Background Astronomical Applications."

Thronson, H. A., Harper, D. A., Bally, J., Dragovan, M., Mozurkewich, D., Greenhouse, M. A., Schwartz, P. R., Smith, H. A., Bieging, J. H., Loewenstein, R. F., and Lada, C. J. 1986, A.J., 91, 1350. "The Orion Star-Forming Region: Far Infrared and Radio Molecular Observations."

1987

Smith, J., Harper, D. A., and Loewenstein, R. F. 1987, Ap.J., 314, 76. "Dust Reradiation from M43."

Thronson, H.A., Hunter, D. A., Telesco, C. M., Harper, D. A., and Decher, R. 1987, Ap.J., 317, 180. "Star Formation in the Magellanic Irregular Galaxy NGC 4449."

Jaffe, D. T., Genzel, R., Harper, D. A., Harris, A. I., and Ho, P. T. P. 1987, in IAU Symposium 115, Star Forming Regions, ed. M. Peimbert and J. Jugaku (Dordrecht: Kluwer), p. 143. "The Most Luminous Star Formation Regions in the Galaxy."

1988

Thronson, Harley A., Jr., Hunter, Deidre A., Telesco, C. M., Greenhouse, Matthew, and Harper, D. A. 1988, Ap.J., 334, 605. "The Magellanic Irregular Galaxy NGC 4214: Star Formation and the Interstellar Medium."

Engargiola, G., Harper, D. A., Willner, S. P., and Elvis, M. 1988, Ap. J. (Letters), 332, L19. "The Submillimeter Spectral Break in Seyfert Galaxies."

Casey, S. C., and Harper, D. A. 1988, in *Interstellar Matter, Proceedings of the 2nd Haystack Observatory Meeting: a symposium on interstellar molecules and grains in honor of Alan H. Barrett.* (New York: Gordon & Breach), p. 231. "Reflection Nebulae of Mon R1 in the Far-Infrared and Submillimeter."

1989

Engargiola, G., Harper, D. A., and Jaffe, D. T. 1989, in IAU Symposium 135, *Interstellar Dust*, ed. A.G.G.M. Tielens and L. J. Allamandola. (NASA CP-3036, p. 331. "100 and 160 Micron Maps of the Dust Reemission from the Nucleus and Inner-Arm Regions of NGC 6946.

Stark, A. A., Davidson, J. A., Harper, D. A., Pernic, R., Loewenstein, R., Platt, S., Engargiola, G., and Casey, S. 1989, Ap.J., 337, 650. "Far-Infrared and Submillimeter Photometric Mapping of Spiral Galaxies in the Virgo Cluster."

Thronson, H. A., Jr., Hunter, D. A., Casey, S., Latter, W. B., and Harper, D. A. 1989, Ap. J., 339, 803. "The Interacting Galaxy Pair NGC 4485 and NGC 4490: Star Formation and the Interstellar Medium."

- Hunter, Deidre A., Thronson, Harley A., Jr., Casey, Sean, and Harper, D. A. 1989, *Ap. J.*, **341**, 697. "Star Formation and the Interstellar Medium in Two Peculiar, Nonspiral Galaxies: NGC 1569 and NGC 3593."
- Thronson, H. A., Jr., Hereld, M., Majewski, S., Greenhouse, M., Johnson, P., Spillar, E., Woodward, C. E., Harper, D. A., and Rauscher, B. J. 1989, *Ap. J.*, **343**, 158. "Near-Infrared Images of NGC 1068: Bar-driven Star Formation and the Circumnuclear Composition."
- Harper, D.A. 1989, in *Astrophysics in Antarctica*, AIP Conference Proceedings 198, ed. D. J. Mullan, Martin A. Pomerantz, and T. Stanev, p. 123. "Infrared Astronomy in Antarctica."
- Stark, A. A., Davidson, J. A., Harper, D. A., Pernic, R. J., Loewenstein, R., Platt, S., Engargiola, G., and Casey, S. 1989, in *The Physics and Chemistry of Interstellar Molecular Clouds*, ed. G. Winnewisser and J. T. Armstrong (Berlin: Springer-Verlag; Lecture Notes in Physics 331), p. 262. "On the far-IR and sub-mm spectra of spiral galaxies."

1990

- Thronson, Harley A., Jr., Hunter, Deidre A., Casey, Sean, and Harper, D. A. 1990, *Ap. J.*, **355**, 94. "Submillimeter Continuum Emission from Galaxies: Star Formation and the Interstellar Medium in the Local Group Dwarf IC 10."
- Casey, S. C., and Harper, D. A. 1990, *Ap. J.*, **362**, 663. "VY Monocerotis and the IC 446 Region: Far-Infrared and Submillimeter Images of a Massive Young Stellar Object and Its Environment."
- Hereld, M., Harper, D. A., Pernic, R. J., and Rauscher, B. J. 1990, "pNIC - A Near-Infrared Camera for Testing Focal Plane Arrays," in *SPIE Proc.*, vol. 1235. *Instrumentation in Astronomy VII*, Tucson, AZ, 11-17 February 1990, p. 84.
- Hereld, M., Rauscher, B. J., Harper, D. A., and Pernic, R. J. 1990, "GRIM - A Near-Infrared Grism Spectrometer and Imager", in *SPIE Proc.*, vol. 1235. *Instrumentation in Astronomy VII*, Tucson, AZ, 11-17 February 1990, p. 43.
- Ladd, E. F., Myers, P. C., Casey, S. C., Harper, D. A., Davidson, J. A., Benson, P. J., and Levreault, R. M. 1990, in *Submillimeter Astronomy, Proceedings of the Kon Symposium on Millimetre and Submillimetre Astronomy* (Dordrecht: Kluwer), p. 35. "Far-infrared and Submillimeter Analysis of a Dense Core: Temperature and Density Structure of L1489."
- Engargiola, G., and Harper, D. A. 1990, in *The Interstellar Medium in External Galaxies: summaries of Contributed Papers of the 2nd Wyoming Conference*. ed. D. J. Hollenbach and H. A. Thronson, Jr. (NASA CP-3084), p. 97. "Contribution of cool dust to the FIR brightness distribution of NGC 6946 SC(s)II."
- Thronson, H. A., Jr., Hunter, D. A., Casey, S., Engargiola, G., and Harper, D. A. 1990, in *The Interstellar Medium in External Galaxies: summaries of Contributed Papers of the 2nd Wyoming Conference*. ed. D. J.

Hollenbach and H. A. Thronson, Jr. (NASA CP-3084), p. 116. "Peering beyond IRAS: the 100 to 350 μm dust emission from galaxies."

1991

Ladd, E. F., Adams, Fred C., Casey, S., Davidson, J. A., Fuller, G. A., Harper, D. A., Myers, P. C., and Padman, R. 1991, *Ap. J.*, 366, 203. "Far-Infrared and Submillimeter-Wavelength Observations of Star-Forming Dense Cores. I. Spectra."

Ladd, E. F., Adams, Fred C., Casey, S., Davidson, J. A., Fuller, G. A., Harper, D. A., Myers, P. C., and Padman, R. 1991, *Ap. J.*, 382, 555. "Far-Infrared and Submillimeter Wavelength Observations of Star-Forming Dense Cores. II. Images."

1992

Engargiola, G., and Harper, D. A. 1992, *Ap.J.*, 394, 104. "The Structure of NGC 4565 at 100, 160, and 200 Microns: Continuum Dust Emission in a Quiescent Sb Galaxy."

Loewenstein, R. F., Owen, R., Yanny, B., Fowler, J. R., Harper, D. A., and York, D. 1992, "Design Fundamentals of Interactive Remote Observing - Remote Usage of the Apache Point Telescope," in *Proceedings of the Remote Observing Workshop*, April 21-23, 1992, in publication.

D. A. Harper

1973

Boggess, N. W., Low, F., Harper, D. A. 1973, Bull. AAS, 5, 438. "Far Infrared Observations of VY Canis Majoris."
 Harper, D. A., Rieke, G. H., and Low, F. J. 1973, Bull. AAS, 5, 436. "Observations of M17 from 10 to 100 Microns."

1974

Thronson, H. A., Harper, D. A., Loewenstein, R. F., and Telesco, C. M. 1974, Bull. AAS, 6, 443.
 Loewenstein, R. F., Harper, D. A., Thronson, H. A., and Telesco, C. M., 1974, Bull. AAS, 6, 443. "Far Infrared Observations of M8."
 Telesco, C. M., Harper, D. A., Loewenstein, R. F., and Thronson, H. A. 1974, Bull. AAS, 6, 464. "45 to 100 mm Observations of NGC 7027."

1975

Werner, M. W., Gatley, I., Becklin, E. E., Cheung, L., Harper, D. A., Jr., Loewenstein, R. F., Telesco, C. M., and Thronson, H. A., Jr. 1975, Bull. AAS, 7, 249. "50 and 100 Micron Maps of the Orion Nebula with One Arc Minute Resolution."
 Telesco, C. M., and Harper, D. A., Jr. 1975, Bull. AAS, 7, 436. "The 37 to 350 Micron Flux from NGC 1068."
 Loewenstein, R. F., Harper, D. A., Thronson, H. A., Telesco, C. M., and Moseley, S. H. 1975, Bull. AAS, 7, 259. "Far Infrared Photometry of Uranus, Saturn, Jupiter, and Mars."
 Harper, D. A., Thronson, H. A., Whitcomb, S., Hildebrand, R., Stiening, R., and Winston, R. 1975, Bull. AAS, 7, 529. "The Infrared Emission from Sgr B2."
 Telesco, C. M., and Harper, D. A. 1975, Bull. AAS, 7, 530. "A 60 mm Map of the Galactic Center with 30" Resolution."
 Thronson, H. A., Gatley, I., Harper, D. A., Becklin, E., Loewenstein, R., Moseley, S. H., Neugebauer, G., and Wynn-Williams, G. 1975, Bull. AAS, 7, 530. "Far Infrared Observations of NGC 7538."

1976

Thronson, H. A., Jr., and Harper, D. A., Jr. 1976, paper presented at the Berkeley Meeting of the Astronomical Society of the Pacific, 1976 May 18-22. "Airborne Infrared Observations of K3-50."

1977

Telesco, C. M., and Harper, D. A. 1977, Bull. AAS, 9, 309. "Far-Infrared Observations of Extragalactic Objects."
 Kleinmann, S. G., Sargent, D. G., Moseley, S. H., Harper, D. A., Loewenstein, R. F., Telesco, C. M., and Thronson, H. A. 1977, Bull. AAS, 9, 372. "Far Infrared Observations of Sources Associated with Binuclear Nebulae."

Thronson, H. A., Jr., and Harper, D. A. 1977, Bull. AAS, 9, 372. "Far-Infrared Observations of Compact H II Regions and Pre-Main-Sequence Objects."

Loewenstein, R. F., Harper, D. A., and Moseley, H. 1977, Bull. AAS, 9, 431. "Far Infrared Observations of Neptune."

Moseley, H., Harper, D. A., and Loewenstein, R. F. 1977, Bull. AAS, 9, 433.

1978

Keene, J., Harper, D. A., Jr., and Loewenstein, R. F. 1978, Bull. AAS, 10, 394. "Far Infrared Maps of the OMC-1, OMC-2 Region."

1979

Keene, J., Harper, D. A., Jr., Hildebrand, R. H., Loewenstein, R. F., Moseley, S. H., Whitcomb, S. E., Winston, R., and Stiening, R. F. 1979, Bull. AAS, 10, 687. "Far Infrared Observations of Barnard 335."

Loewenstein, R. F., Harper, D. A., Jr., Moseley, S. H., Shaya, E. H., and Smith, J. 1979, Bull. AAS, 11, 454. "Far Infrared Observations of Titan and Iapetus."

1980

Wright, E. L., Harper, D. A., Jr., Loewenstein, R. F., Keene, J., and Whitcomb, S. E. 1980, Bull. AAS, 11, 726. "A Search for Far-Infrared Emission from Young Supernova Remnants."

1981

Smith, H. A., Lada, C. J., Thronson, H. A., Jr., Harper, D. A., Keene, J., Loewenstein, R. F., and Smith, J. 1981, Bull. AAS, 13, 541. "B35 and FU Ori: Dust Temperatures and Energetics from 60 to 250 Micrometer Photometry."

1982

Smith, J., Harper, D. A., and Hildebrand, R. H. 1982, Bull. AAS, 13, 808. "Multifrequency Photometry of the Orion Ridge at Far Infrared Wavelengths."

Smith, J., Harper, D. A., Loewenstein, R. F., and Glaccum, W. 1982, Bull. AAS, 13, 808. "Far Infrared Maps of M43."

Smith, H. A., Thronson, H. A., Jr., Lada, C. J., Harper, D. A., Jr., Glaccum, W., Loewenstein, R. F., and Smith, J. 1982, Bull. AAS, 13, 892. "Far IR Observations of NGC 4051."

1986

Balick, B., Margon, B., York, D., Harper, D. A., Anderson, K., Gunn, J., and Lutz, T. 1986, Bull. AAS, 18, 957. "The A.R.C. 3.5-m Optical/IR Telescope Project."

Harper, D. A., Pernic, R. J., Loewenstein, R. F., Davidson, J. A., Jezewsky, J., Hildebrand, R. H., and Platt, S. R. 1986, Bull. AAS, 18, 942. "Bolometer Array Cameras for Far-Infrared and Submillimeter Astronomy."
 Casey, S. C., and Harper, D. A. 1986, Bull. AAS, 18, 1030. "The Surface Brightness of Reflection Nebulae in the Far-Infrared."
 Jaffe, D. T., Harper, D. A., and Loewenstein, R. F. 1986, Bull. AAS, 18, 1033. "Far Infrared Mapping of NGC 4736."

1987

Casey, S. C., and Harper, D. A. 1987, Bull. AAS, 19, 1015. "Reflection Nebulae of Mon R1 in the Far-Infrared and Submillimeter."
 Ladd, E. F., Myers, P. C., Casey, S. C., Harper, D. A., Benson, P. J., Campbell, B. G., and Davidson, J. A. 1987, Bull. AAS, 19, 1015. "Multifrequency Observations of Two Dense Cloud Cores."
 Engargiola, G., Harper, D. A., Elvis, M., and Willner, S. P. 1987, Bull. AAS, 19, 1017. "Sub-millimeter Break in Seyfert 1 Energy Distributions."

1988

Ladd, E. F., Benson, P. J., Casey, S. C., Davidson, J. A., Harper, D. A., Levreault, R. M., and Myers, P., C. 1988, Bull. AAS, 20, 1060.

1990

Ladd, E. F., Adams, F. C., Fuller, G. A., Myers, P. C., Casey, S. A., Davidsen, J. A., Harper, D. A., and Padman. 1990, Bull. AAS, 22, 1328. "Far Infrared and Submillimeter Wavelength Observations of Star Forming Dense Clouds."

Papers by Students and Research Associates

1980

Moseley, Harvey 1980, Ap. J., 238, 892. "Observations of Cool Dust in Planetary Nebulae."

1981

Keene, Jocelyn 1981, Ap. J., 245, 115. "Far-Infrared Observations of Globules."

Whitcomb, S. E., Gatley, Ian, Hildebrand, R. H., Keene, Jocelyn, Sellgren, K., and Werner, M. W. 1981, Ap. J., 246, 416. "Far-Infrared Properties of Dust in the Reflection Nebula NGC 7023."

1983

Smith, J. 1983, Ap. J., 261, 463. "The Far-Infrared Disk of M51."

1984

Davidson, J., and Jaffe, D.T. 1984, Ap. J. (Letters), 277, L13. "Far-IR and Submillimeter Observations of the Low-Luminosity Protostars L1455-FIR and L1551-IRS5: The Confinement of Bipolar Outflows."

Davidson, J. 1984, in Proc. of the 1984 NASA/ASP Symposium on Airborne Astronomy, p. 186. "Star Formation in Globules."

1986

Dragovan, Mark. 1986, Ap. J., 308, 270. "Submillimeter Polarization in the Orion Nebula."

1987

Davidson, J. A. 1987, Ap. J., 315, 602. "Low Luminosity Embedded Sources and Their Environs."