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BORN: June 5, 1952 - Chicago, Illinois (U.S. Citizen)**MARRIED:** June 23, 1974 - Wife: Rosalinda (no children)**EDUCATION:**

| <u>School</u> | <u>Degree/Major</u> | <u>Date</u> |
|---------------|---------------------|-------------|
| Bowen H.S. | | June, 1970 |
| Univ. Chicago | B.A. / Physics | June, 1974 |
| UCSD | M.S. / Physics | March, 1977 |
| UCSD | Ph.D. / Physics | March, 1980 |

EMPLOYMENT:

| <u>Position</u> | <u>Employer</u> | <u>Date</u> |
|-------------------------|---|--------------|
| Research Asst. | X-Ray Astr. Group, Univ. of Chicago | 1972-1973 |
| Research Asst. | Gamma-Ray Astr. Group, Univ. of Chicago | 1973-1974 |
| Teaching Asst. | UCSD | 1974-1975 |
| Research Asst. | UCSD | 1975-1980 |
| Post Grad Res Phys. | UCSD | 1980-1982 |
| Asst. Res. Phys. | UCSD | 1982-1987 |
| Assoc. Res. Phys. | UCSD | 1987-1993 |
| Research Physicist | UCSD | 1993-Present |
| Managing Director | Pixon LLC | 1997-2006 |
| Chief Executive Officer | PixonImaging LLC | 2006-Present |

PATENTS:

| <u>Patent Name</u> | <u>Status</u> |
|---|---------------|
| "Signal Encoding and Reconstruction Using Pixons" (US Pat. No. 5,912,993) | Jun. 15, 1999 |
| "Accelerated Signal Encoding and Reconstruction Using Pixon Method" (US Pat. No. 6,353,688—Continuation in part of Pat. No. 5,912,993) | March 5, 2002 |
| "Accelerated Signal Encoding and Reconstruction Using Pixon Method" (US Pat. No. 6,490,374—Continuation of Pat. No. 6,353,688) | Dec. 3, 2002 |

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| "Accelerated Signal Encoding and Reconstruction Using Pixon Method" (US Pat. No. 6,895,125—Continuation of Pat. No. 6,490,374) | May 17, 2005 |
| "High Speed Signal Enhancement Using Pixon" (US Pat. No. 6,993,204) | Jan. 31, 2006 |
| "System and Method for Prediction of Behavior of Complex Systems" (US Pat. No. 7,328,182 B1) | Feb. 5, 2008 |
| "Image Compression and Decompression Using the Pixon Method" | Pending |

PROFESSIONAL SOCIETIES:

American Astronomical Society
 International Astronomical Union
 SPIE—The International Society for Optical Engineering

BIOGRAPHICAL SKETCH:

Dr. Puetter has extensive experience in infrared instrumentation, IR observations, and computational physics, and has authored over 180 scientific papers. He has built a number of state-of-the-art instruments, including a mid-IR imaging spectrometer for the world's largest telescopes, the Keck Telescopes in Hawaii (B. Jones, Co-PI). He has made both ground-based and airborne observations of a variety of astronomical objects, and has substantial experience in the modeling of complex systems and numerical solutions to complex problems such as radiative transfer models of QSO emission line clouds and the solution of inverse problems. Dr. Puetter has performed observational work on a variety of subjects, including the interstellar medium, quasars and active galaxies, supernovae, novae, planetary nebula, and solar system objects. Most recently, Dr. Puetter has become interested in image reconstruction and minimum complexity modeling. He is a co-developer (along with Robert Piña) of the highly successful Pixon method of image reconstruction and information-theoretic modeling of images. The Pixon method of image reconstruction is currently the highest performance and one of the computationally fastest methods available. Dr. Puetter is also commercializing the Pixon method for the enhancement of military and security imagery, real-time commercial video, microscopy, and image compression. To date the Pixon method has been awarded 5 patents (plus one pending) for image processing. One of Dr. Puetter's newest thrusts is to use the Pixon method to increase the performance of image compression and decompression. When applied to image compression, the Pixon method offers a theoretically optimal image compression method. Dr. Puetter is considered a world expert in image reconstruction methods and was recently asked to review this subject area for the prestigious Annual Review of Astronomy & Astrophysics.

SELECTED PAPERS:

- Piña, R. K., and Puetter, R. C., "Bayesian Image Reconstruction: The Pixon and Optimal Image Modeling", *P.A.S.P.*, **105**, pp. 630-637, (June 1993).
- Puetter, R. C., and Piña, R. K., "The Pixon and Bayesian Image Reconstruction", *Proc. S.P.I.E.*, **1946**, pp. 405-416 (April 1993).
- Puetter, R. C., "Pixon-Based Multiresolution Image Reconstruction and the Quantification of Picture Information Content", *Int. J. Image Sys. & Tech.*, **6**, pp. 314-331. (Winter 1995). INVITED REVIEW
- Puetter, R. C., and Yahil, A., "The Pixon Method of Image Reconstruction", in *Astronomical Data Analysis Software and Systems VIII*, D. M. Mehringer, R. L. Plante, and D. A. Roberts, Eds., ASP Conference Series, **172**, pp. 307-316, (1999). INVITED REVIEW.
- Puetter, R. C., Gosnell, T. R., and Yahil, A., "Digital Image Reconstruction: Deblurring and Denoising", *Ann. Rev. Astron. & Astrophys.*, **43**, pp. 139-194 (2005). INVITED REVIEW.

A. Published Work

A1. Research Articles

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|------|--|---------------------|
| (1) | Blake, R.L., Burek, A.J., Fenimore, E., and Puetter, R.C., "Solar X-Ray Photography with Multiplex Pin-Hole Camera", <i>Rev. Sci. Instrum.</i> , 45 , pp. 513-517 (1974) (4 pages). | RESEARCH ARTICLE |
| (2) | Blake, R.L., Santos, P.F., Barrus, D.M., Brubaker, W., Fenimore, E., and Puetter, R.C., "Collimators for Soft X-Ray Measurements", <i>Space Sci. Instrum.</i> , 2 , 171 (1976) (26 pages). | RESEARCH ARTICLE |
| (3) | Puetter, R.C., Russell, R.W., Sellgren, K., and Soifer, B.T., "Spectra of Late Type Stars from 4-8 μ m ", <i>P.A.S.P.</i> , 89 , 320, (1977) (3 pages). | RESEARCH ARTICLE |
| (4) | Russell, R.W., Soifer, B.T., and Puetter, R.C., "The 4-8 μ m Spectrum of the BNLK Source in Orion", <i>Astron. Astrophys.</i> , 54 , 959 (1977) (2 pages). | RESEARCH ARTICLE |
| (5) | Puetter, R.C., and Russell, R.W., "The 2-4 μ m Spectrum of Saturn's Rings", <i>Icarus</i> , 32 , 37 (1977) (4 pages). | RESEARCH ARTICLE |
| (6) | Puetter, R. C., Russell, R. W., Soifer, B. T., and Willner, S. P., "Infrared Spectra of HM Sagittae and V1016 Cygni", <i>Ap. J. (Letters)</i> , 223 , L93 (1978) (3 pages). | RESEARCH ARTICLE |
| (7) | Forrest, W. J., Gillett, F.C., Houck, J. R., McCarthy, J. F., Merrill, K. M., Pipher, J. L., Puetter, R. C., Russell, R. W., Soifer, B. T., and Willner, S. P., "Spectrophotometry of OH 26.5+0.6 and V1016 Cygni", <i>Ap. J.</i> , 219 , 114 (1978) (7 pages). | RESEARCH ARTICLE |
| (8) | Jones, B., Merrill, K.M., Puetter, R.C., and Willner, S.P., "The Infrared Spectrum of GL 3068", <i>A. J.</i> , 83 , 1437 (1978) (3 pages). | RESEARCH ARTICLE |
| (9) | Puetter, R.C., Smith, H.E., Soifer, B.T., Willner, S.P., and Pipher J.L., "Spectrophotometry of Quasi-Stellar Objects at Optical and Infrared Wavelengths: PG 0026+129 and 3C 273", <i>Ap. J. (Letters)</i> , 226 , L53 (1978) (4 pages). | RESEARCH ARTICLE |
| (10) | Puetter, R.C., Smith, H.E., and Willner, S.P. "Spectrophotometry of Quasi-Stellar Objects at Optical and Infrared Wavelengths: The L α /H α Ratio in B2 1225+317", <i>Ap. J. (Letters)</i> , 227 , L5 (1978) (3 pages). | RESEARCH ARTICLE |
| (11) | Willner, S.P., Puetter, R.C., Russell, R.W., and Soifer, B.T., "Unidentified Infrared Spectral Features", <i>Astrophys. Space Sci.</i> , 65 , 95. (1979) (7 pages). | RESEARCH ARTICLE |
| (12) | Puetter, R.C., Russell, R.W., Soifer, B.T., and Willner, S.P. "Spectrophotometry of Compact H II Regions from 4-8 μ m ", <i>Ap. J.</i> , 228 , 118 (1979) (5 pages). | RESEARCH ARTICLE |
| (13) | Willner, S.P., Jones, B., Puetter, R.C., Russell, R.W., and Soifer B.T., "Infrared Spectra of IC 418 and NGC 6572", <i>Ap. J.</i> , 234 , 496 (1979) (7 pages). | RESEARCH ARTICLE |
| (14) | Willner, S.P., Russell, R.W., Puetter, R.C., Soifer, B.T., and Harvey, P.M., "The 4-8 Micron Spectrum of the Galactic Center", <i>Ap. J. (Letters)</i> , 229 , L65 (1979) (4 pages). | RESEARCH ARTICLE |
| (15) | Gosnell, T.R., Hudson, H.S., and Puetter, R.C., "Ground-Based Observations of Sources in the AFGL Sky Survey", <i>A. J.</i> , 84 , 538 (1979) (10 pages). | RESEARCH ARTICLE |

- (16) Soifer, B.T., Puetter, R.C., Russell, R.W., Willner, S.P., Harvey, P.M., and Gillett, F.C., "The 4-8 Micron Spectrum of the Infrared Source W33A", *Ap. J. (Letters)*, **232**, L53 (1979) (5 pages). RESEARCH ARTICLE
- (17) Gobel, J.H., Bregman, J.D., Goorvitch, D., Strecher, D.W., Puetter, R.C., Russell, R.W., Soifer, B.T., Willner, S.P., Forrest, W.J., Houck, J.R., and McCarthy, J.F., "The Infrared Spectrum of the Carbon Star Y CVn between 1.2 μ m and 30 μ m", *Ap. J. (Letters)*, **235**, L104 (1980) (10 pages). RESEARCH ARTICLE
- (18) Charles, P.A., Thorstenson, J.R., Bowyer, S., Clark, G.W., Li, F.K., van Paradijs, J., Remillard, R., Holt, S.S., Kaluzienski, L.J., Junkarinen, V.T., Puetter, R.C., Smith, H.E., Pollard, G.S., Sanford, P.W., Tapia, S., and Vrba, F.J., "The 1978 X-Ray and Optical Outburst of Aql X-1 (4U1908+00)", *Ap. J.*, **237**, 154 (1980) (9 pages). RESEARCH ARTICLE
- (19) Canfield, R.C., and Puetter, R.C., "The Implications of Hydrogen Emission Line Ratios in Quasi-Stellar Objects", *Ap. J. (Letters)*, **236**, L7 (1980) (5 pages). RESEARCH ARTICLE
- (20) Gehrz, R.D., Hackwell, J.A., Grasdalen, G.L., Merrill, K.M., Humphreys, R.M., Williamson, F.O., Puetter, R.C., Russell, R.W., and Willner, S.P., "On the Nature of the Peculiar Infrared Source AFGL 2636", *A. J.*, **85**, 1071 (1980) (6 pages). RESEARCH ARTICLE
- (21) Canfield, R.C., and Puetter, R.C. "Theoretical Quasar Emission Line Ratios. I. Transfer and Escape of Radiation", *Ap. J.*, **243**, 381 (1981) (9 pages). RESEARCH ARTICLE
- (22) Canfield, R.C., and Puetter, R.C. "Theoretical Quasar Emission Line Ratios. II. Hydrogen $L\alpha$, Balmer and Paschen Lines and the Balmer Continuum", *Ap. J.*, **243**, 390 (1981) (14 pages). RESEARCH ARTICLE
- (23) Puetter, R.C., Smith, H.E., Willner, S.P., and Pipher, J.L. "Optical and Infrared Spectrophotometry of Quasi-Stellar Objects: The Spectra of 14 QSOs", *Ap. J.*, **243**, 345 (1981) (24 pages). RESEARCH ARTICLE
- (24) Cutri, R.M., Aitken, D.K., Jones, B., Merrill, K.M., Puetter, R.C., Roche, P.F., Rudy, R.J., Russell, R.W., Soifer, B.T., and Willner, S.P., "Infrared Spectrophotometry of Three Seyfert Galaxies and 3C 273", *Ap. J.*, **245**, 818 (1981) (11 pages). RESEARCH ARTICLE
- (25) Canfield, R.C., Puetter, R.C., and Ricchiazzi, P.J., "The $L\alpha/H\alpha$ Ratio in Solar Flares and Quasars", *Ap. J.*, **249**, 383 (1981) (7 pages). RESEARCH ARTICLE
- (26) Witteborn, F.C., Pollack, J.B., Bregman, J.D., Gobel, J.H., Soifer, B.T., Puetter, R.C., Rudy, R.J., and Willner, S.P., "Observations of Saturn in the 5 to 8 μ m Spectral Region", *Icarus*, **45**, 653, (1981) (8 pages). RESEARCH ARTICLE
- (27) Herter, T., Pipher, J.L., Helfer, H.L., Willner, S.P., Puetter, R.C., and Rudy, R.J. "Measurements of Forbidden Line Radiation of Ar II (6.99 μ m) in W3 IRS 1", *Ap. J.*, **244**, 511 (1981) (6 pages). RESEARCH ARTICLE
- (28) Herter, T., Helfer, H.L., Pipher, J.L., Forrest, W.J., McCarthy, J.R., Houck, J.R., Willner, S.P., Puetter, R.C., Rudy, R.J., and Soifer, B.T., "Abundances of Argon, Sulphur, and Neon in Six Galactic H II Regions from Infrared Forbidden Lines", *Ap. J.*, **250**, 186 (1981) (14 pages). RESEARCH ARTICLE
- (29) Canfield, R.C., Puetter, R.C., and Ricchiazzi, P.J., "Theoretical Quasar Emission Line Ratios. III. Flux Divergence and Photon Escape", *Ap. J.*, **248**, 82 (1981) (5 pages). RESEARCH ARTICLE

- (30) Puetter, R.C., "Theoretical Quasar Emission Line Ratios IV. Asymptotic Escape Probabilities and Linear Stark Broadening", *Ap. J.*, **251**, 446 (1981) (5 pages). RESEARCH ARTICLE
- (31) LeVan, P.D., Puetter, R.C., Rudy, R.J., Smith, H.E., and Willner, S.P., "He I λ 10830 Observations of Five Seyfert Galaxies", *Ap. J.*, **251**, 10 (1981) (5 pages). RESEARCH ARTICLE
- (32) Rudy, R.J., LeVan, P.D., Puetter, R.C., Smith, H.E., and Willner, S.P., "Infrared Polarimetry of Nine Seyfert Galaxies", *Ap. J.*, **253**, 53 (1982) (5 pages). RESEARCH ARTICLE
- (33) Willner, S.P., Gillett, F.C., Herter, T.L., Jones, B., Krassner, J., Merrill, K.M., Pipher, J.L., Puetter, R.C., Rudy, R.J., Russell, R.W., and Soifer, B.T., "Infrared Spectra of Protostars: Composition of the Dust Shells", *Ap. J.*, **253**, 174 (1982) (14 pages). RESEARCH ARTICLE
- (34) Rudy, R.J., Jones, B., LeVan, P.D., Puetter, R.C., Smith, H.E., and Willner, S.P., "Infrared Spectrophotometry of Four Seyfert Galaxies and NGC 1275", *Ap. J.*, **257**, 570 (1982) (8 pages). RESEARCH ARTICLE
- (35) Puetter, R.C., and LeVan, P.D. "Theoretical Quasar Emission Line Ratios V: Balmer Continuum Emission", *Ap. J.*, **260**, 44 (1982) (12 pages). RESEARCH ARTICLE
- (36) Puetter, R.C., Burbidge, E.M., Smith, H.E., and Stein, W.A., "The Continuum of QSO's and the Nature of the Broad 3600 Emission Feature", *Ap. J.*, **257**, 487 (1982) (12 pages). RESEARCH ARTICLE
- (37) Puetter, R.C., Hubbard, E.N., Ricchiazzi, P.J., and Canfield, R.C., "Theoretical Quasar Emission Line Ratios. VI. A Probabilistic Radiative Transfer Equation for Finite Slabs", *Ap. J.*, **258**, 46 (1982) (7 pages). RESEARCH ARTICLE
- (38) Knacke, R.F., McCorkle, S., Puetter, R.C., Erickson, E.F., and Kratschmer, W., "Observations of Interstellar Ammonia Ice", *Ap. J.*, **260**, 141 (1982) (6 pages). RESEARCH ARTICLE
- (39) Rudy, R.J., and Puetter, R.C., "The Heating of Dust in the Broad-Line Regions of Active Galaxies and Quasars", *Ap. J.*, **263**, 43 (1982) (11 pages). RESEARCH ARTICLE
- (40) Hubbard, E.N., and Puetter, R.C., "Theoretical Quasar Emission Line Profiles. I. Curve-of-Growth Effects on Observed Profiles", *Ap. J.*, **265**, 35 (1983) (8 pages). RESEARCH ARTICLE
- (41) Puetter, R.C., and Hubbard, E.N., "Theoretical Quasar Emission Line Profiles. II. Effects of Source Function Variation and Total Thickness", *Ap. J.*, **273**, 36 (1983) (8 pages). RESEARCH ARTICLE
- (42) Jones, B., Hier, R.G., Nelson, S.E., Puetter, R.C., and Schmidt, G.W., "A Grating Array Spectrophotometer for the 10 Micron Spectral Region", *Proc. S.P.I.E.*, **445**, 108 (1984) (5 pages). RESEARCH ARTICLE
- (44) Puetter, R.C., Brissenden, P.J., Casler, J., Hier, R.G., and Jones, B., "A Low Noise Infra-Red Spot Scanner for Testing Detector Arrays", *Proc. S.P.I.E.*, **445**, 162 (1984) (5 pages). RESEARCH ARTICLE
- (44) LeVan, P.D., Puetter, R.C., Smith, H.E., and Rudy, R.J., "He I λ 10830 Emission in Seyfert Galaxies and QSOs", *Ap. J.*, **284**, 23 (1984) (10 pages). RESEARCH ARTICLE
- (45) Schmidt, G.W., Hier, R.G., Nelson, S.E., and Puetter, R.C., "A Charge Sensitive Readout Technique for Infrared Photoconductors", *Adv. Elec. Elec. Phys.*, **64A**, 251 (1985) (6 pages). RESEARCH ARTICLE

- (46) Hubbard, E.N., and Puetter, R.C. "Theoretical Quasar Emission Line Ratios VII. Energy Balance Models for Finite-Slab Hydrogen Clouds", *Ap. J.*, **290**, 394 (1985) (17 pages). RESEARCH ARTICLE
- (47) Puetter, R.C., and Hubbard, E.N., "Theoretical Quasar Emission Line Ratios VIII. Implications of Free-Free Emission for QSO Clouds", *Ap. J.*, **295**, 394 (1985) (8 pages). RESEARCH ARTICLE
- (48) Rudy, R.J., Cohen, R.D., and Puetter, R.C., "IUE Observations of the Seyfert 1.9 Galaxy Markarian 423", *Ap. J. (Letters)*, **288**, L29 (1985) (4 pages). RESEARCH ARTICLE
- (49) Middleditch, J., Puetter, R.C., and Pennypacker, C.R., "Optical and Infrared Pulsations From the HZ Herculis Binary System During the 1983 Prolonged X-Ray Low State", *Ap. J.*, **292**, 267 (1985) (9 pages). RESEARCH ARTICLE
- (50) Knacke, R.F., Puetter, R.C., Erickson, E., and McCorkle, S., "Interstellar Dust Spectra Between 2.5 and 3.3: A Search for Hydrated Silicates", *A. J.*, **90**, 1828 (1985) (4 pages). RESEARCH ARTICLE
- (51) Cohen, R.D., Rudy, R.J., Puetter, R.C., Ake, T.B., and Foltz, C.B., "Variability of Markarian 1018: Seyfert 1.9 to Seyfert 1", *Ap. J.*, **311**, 135 (1986) (7 pages). RESEARCH ARTICLE
- (52) Jones, B., and Puetter, R.C., "Plans for Keck Telescope Instrumentation", *Proc. S.P.I.E.*, **627** (1986) (2 pages). RESEARCH ARTICLE
- (53) Friedman, S. D., Jones, B., Puetter, R. C., "The University of California at San Diego near-infrared charge-coupled device (CCD)", *Proc. SPIE*, **686**, pp. 96-100 (1986) RESEARCH ARTICLE
- (54) Rudy, R.J., Rossano, G.S., Puetter, R.C., and Cohen, R.D., "Detection of the He I λ 10830 Line in the Broad-Line Radio Galaxy 3C 120", *A. J.*, **93**, 284. (1987) (4 pages). RESEARCH ARTICLE
- (55) Bradley, S.E., and Puetter, R.C. "QSO Emission Line Profiles From Keplerian Cloud Ensembles", *Astron. Atmosphys.*, **165**, 31 (1986) (8 pages). RESEARCH ARTICLE
- (56) Puetter, R.C., and Hubbard, E.N., "The Velocity Distribution of Quasar/AGN Broad Emission Line Clouds", *Ap. J.*, **320**, 289. (1987) (12 pages). RESEARCH ARTICLE
- (57) Rossano, G.S., Rudy, R.J., Russell, R.W., Puetter, R.C., and Chapman, S.C., "1 Micron CN Observations of Comet Halley", *P.A.S.P.*, **99**, 1099 (1987) (3 pages). RESEARCH ARTICLE
- (58) Rudy, R.J., Cohen, R.D., Rossano, G.S., Puetter, R.C., and Chapman, S.C., "Helium I λ 10830 Observations of Seyfert 2 Galaxies", *Ap. J.*, **341**, 120 (1989) (9 pages). RESEARCH ARTICLE
- (59) Rudy, R.J., Rossano, G.S., and Puetter, R.C., "Detection of the O I 11287 Line in the Seyfert Galaxy I Zwicky 1", *Ap. J.*, **342**, 235 (1989) (3 pages). RESEARCH ARTICLE
- (60) Lynch, D.K., Rudy, R.J., Rossano, G.S., Erwin, P., and Puetter, R.C., "Nova Ophiuchi 1988: 0.9-1.35 μ m Spectroscopy 6 Months After Discovery", *A. J.*, **98**, pp. 1682-1885 (Nov. 1989). RESEARCH ARTICLE
- (61) Rudy, R.J., Rossano, G.S., and Puetter, R.C., "The Near-Infrared Oxygen I Lines of the Planetary Nebula IC 4997", *Ap. J.*, **346**, pp. 799-802 (Nov. 1989). RESEARCH ARTICLE
- (62) Lynch, D.K., Rudy, R.J., Rossano, G.S., Erwin, P., Puetter, R.C. and Branch, D., "An Early 1.0-1.35 μ m Spectrum of Type Ia Supernova 1989B and the J-Band Absorption", *A. J.*, **100**, pp. 223-225 (March 1990). RESEARCH ARTICLE

- (63) Zheng, W., and Puetter, R.C., "Quasar Broad Emission Line Ratios at High Density", *Ap. J.*, **361**, pp. 40-48 (Sept. 1990). RESEARCH ARTICLE
- (64) Rudy, R.J., Cohen, R.D., Rossano, G.S., and Puetter, R.C. "Optical and Infrared Spectrophotometry of the Symbiotic Star V1016 Cyg", *Ap. J.*, **362**, pp. 346-353 (Oct. 1990). RESEARCH ARTICLE
- (65) Krinsky, I. and Puetter, R.C., "The Stability of Quasar Broad Emission Line Clouds", *Ap. J.*, **394**, pp. 474-488 (Aug. 1992). RESEARCH ARTICLE
- (66) Krinsky, I. and Puetter, R.C., "Two-Stream, Second-Order, Probabilistic Radiative Transfer", *Ap. J.*, **393**, pp. 716-728 (July 1992). RESEARCH ARTICLE
- (67) Whipple, E., Puetter, R.C., and Rosenberg, M., "A Two-Dimensional, Time-Dependent, Near-Earth Magnetotail", *Adv.Space Res.*, **11**, No. 9, pp. 133-142 (Sept. 1991). RESEARCH ARTICLE
- (68) Rudy, R.J., Rossano, G.S., Erwin, P., and Puetter, R.C., "Near- Infrared Spectroscopy of the Planetary Nebula NGC 6572", *Ap. J.*, **368**, pp. 468-473 (1991). RESEARCH ARTICLE
- (69) Rudy, R.J., Cohen, R.D., Rossano, G.S., Erwin, P., Puetter, R.C., and Lynch, D.K., "The 0.46-1.3 μ m Spectrum of the Planetary Nebula BD+303639", *Ap. J.*, **380**, pp. 151-160 (1991). RESEARCH ARTICLE
- (70) Rudy, R.J., Erwin, P., Rossano, G.S., and Puetter, R.C., "The 1.0 to 1.3 μ m Spectrum of Lk H 101", *Ap. J.*, **383**, pp. 344-350 (Dec. 1991). RESEARCH ARTICLE
- (71) Rudy, R.J., Erwin, P., Rossano, G.S., and Puetter, R.C., "0.8 to 1.6 μ m Spectroscopy of the Planetary Nebula NGC 7027", *Ap. J.*, **384**, 536-544 (Jan. 1992). RESEARCH ARTICLE
- (72) Erwin, P., Lynch, D.K., Rudy, R.J., Rossano, G.S., and Puetter, R.C., "Time Development of the Near-Infrared Spectrum of the Slow Nova V2214 Ophiuchi (Nova Ophiuchi 1988)", *A. J.*, **103**, pp. 1970-1975 (June 1992). RESEARCH ARTICLE
- (73) Greenhouse, M.A., Woodward, C.E., Thronson, H.A. Jr., Rudy, R.J., Rossano, G.S., Erwin, P., and Puetter, R.C., " Near-Infrared [Fe II] Emission of M82 Supernovae Remnants: Implications for Tracing the Supernova Content of Galaxies", *Ap. J.*, **383**, pp. 164-173 (December 1991). RESEARCH ARTICLE
- (74) Lynch, D. K., Erwin, P., Rudy, R. J., Rossano, G. S., and Puetter, R. C., "0.9-1.35 μ m Spectrum of Five Type Ia Supernovae Near Maximum Light", *A. J.*, **104**, pp. 1156-1160 (September 1992). RESEARCH ARTICLE
- (75) Rudy, R.J., Erwin, P. Rossano, G.S., and Puetter, R.C., "The Near- Infrared [Fe II] Lines of MWC 922", *Ap. J.*, **398**, pp. 278-285 (October 1992). RESEARCH ARTICLE
- (76) Piña, R. K., and Puetter, R. C., "Incorporation of Spatial Information in Bayesian Image Reconstruction: The Maximum Residual Likelihood Criterion", *P.A.S.P.*, **104**, pp. 1096-1103 (November 1992). RESEARCH ARTICLE
- (77) Piña, R. K., Jones, B., Puetter, R. C., and Stein, W. A., "12 and 20 Micron Imaging of the Starburst Galaxy NGC 253", *Ap. J. (Letters)*, **401**, pp. L75-L78 (December 1992). RESEARCH ARTICLE
- (78) Rudy, R. J., Rossano, G. S., Erwin, P., Puetter, R. C., and Feibelman, W. A., "Near-Infrared and Ultraviolet Spectrophotometry of the Young Planetary Nebula Hubble 12", *A. J.*, **105**, pp. 1002-1009 (March 1993). RESEARCH ARTICLE

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A. Published Work**A2. Abstracts**

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A. Published Work
A3. Other Published Work

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| (2) | Hier, R.G., Puetter, R.C., Schmidt, G.W., Nelson, S.E., and Hubbard, E.N. "Near-Infrared Astronomical Spectrophotometry with a Cooled CCD", 1982 Cal Space Conference, 29 (1982) (3 pages). | BOOK CHAPTER |
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C. Work in Progress

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|------|---------------------------------|---------------------|
| (1) | see A1, item 56 | RESEARCH ARTICLE |
| (2) | see A2, item 32. | RESEARCH ARTICLE |
| (3) | cancelled due to lack of funds. | RESEARCH ARTICLE |
| (4) | cancelled due to lack of funds. | RESEARCH ARTICLE |
| (5) | see A1 item 62. | RESEARCH ARTICLE |
| (6) | see A2 item 27. | RESEARCH ARTICLE |
| (7) | see A1, item 59. | RESEARCH ARTICLE |
| (8) | see A1, item 73.. | RESEARCH ARTICLE |
| (9) | see A1, item 69. | RESEARCH ARTICLE |
| (10) | see A1, item 71. | RESEARCH ARTICLE |
| (11) | see A1, item 80. | RESEARCH ARTICLE |
| (12) | see A1, item 81 | RESEARCH ARTICLE |

D. Proposals

- (1) Puetter, R.C.¹ (PI) and Canfield, R.C. (Co-PI), "Radiative Transfer and Dynamics in QSO Emission Line Clouds", UCSD# 6359, 2/1/80 - 1/31/84, NASA, Amount Awarded: \$112,792, (42 pages).
¹Puetter assumed sole PI status in the final year; before that his status was Co-PI.
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- (3) Puetter, R.C. (PI), "UV Spectrophotometry of the 4000 to 2000 "Bump", UCSD# 6752, 4/1/81 - 3/31/82, NASA, Amount Awarded: \$8,963, (19 pages).
- (4) Knacke, R.F. (PI), Erickson, E.F. (Co-I), and Puetter, R.C. (Co-I), "Two to Four Micron Spectroscopy: Hydroxyl Ions and Water of Hydration in Interstellar Grains", SUNY proposal, 10/1/81 - 9/30/82, NASA, Amount Awarded: \$26,798, (58 pages).
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- (9) Smith, H.E. (Co-PI), Jones, B. (Co-PI), Puetter, R.C. (Co-PI), and Hier, R.G. (Co-PI), "Development for the Next Generation of Space Borne and Ground-Based Instrumentation", UCSD# 8599, 9/1/82-6/30/83, The University of California MICRO Program, Amount Awarded: \$82,000, (44 pages).
- (10) Puetter, R.C. (PI), "Theoretical Models of QSO Broad-Line Regions", UCSD# 9816, 2/1/84 - 1/31/87, NASA, Amount Awarded: \$96,000, (91 pages).
- (11) Jones, B. (PI), Puetter, R.C. (Co-I), Smith, H.E. (Co-I), and Willner, S.P. (Co-I), "Mid-Infrared Array, Camera, Low-Resolution, Eschelle (MIRACLE) Spectrometer for the Shuttle Infrared Telescope Facility", UCSD# 5642, 10/1/84 - 9/30/92, NASA, Rejected, Amount Requested: \$17,033,662, (163 pages).
- (12) Puetter, R.C. (PI), "Constructon of an IR Camera", UCSD# 6122, 7/1/84 - 6/30/85, Cal Space, Amount Awarded: \$10,399, (11 pages).
- (13) Puetter, R.C. (PI), Mendis, A. (Co-I), Stein, W.A. (Co-I), and Houppis, H. (Co-I), "Construction and Astronomical Application of a Ten Micrometer Camera", UCSD# 6038, 10/1/84 - 9/30/87, NSF, Rejected, Amount Requested: \$293,662, (65 pages).
- (14) Puetter, R.C. (PI), and Friedman, S. (Co-PI), "Development of an Optimized 1 Micron CCD Sensorhead for Spectrophotometry and Direct Imaging", UCSD# 6426, 2/1/85 - 1/31/87, NSF, Rejected, Amount Requested: \$199,075, (37 pages).
- (15) Jones, B. (PI), and Puetter, R.C. (Co-I), "Critical Evaluation of a 2-Dimensional Detector Array for Astronomical Imaging", UCSD# 7629, 9/1/85 - 12/31/86, UC MICRO Program, Amount Awarded: \$34,823 with \$35,000 matching funds from Aerojet ElectroSystems, (35 pages).

- (16) Puetter, R.C. (PI), "Lab Experiments on the Effects of Charged Grains on Molecules", UCSD# 7615, 7/1/85 - 6/30/86, Cal Space, Accepted, Amount Awarded: \$5000, (17 pages).
- (17) Jones, B. (Co-PI), and Puetter, R.C. (Co-PI), "Astronomical Application of IR Array Detectors: A Linear Array Spectrometer and 2-Dimensional Array Camera", UCSD# 7516, 11/1/85 - 10/31/88, NSF, Accepted, Amount Awarded: \$60,000, (99 pages).
- (18) Puetter, R.C. (PI), "Ultraviolet and Optical Spectrophotometry of Seyfert 1.8 and 1.9 Galaxies", UCSD# 866392, 8/15/86 - 8/14/87, NASA, Amount Awarded: \$3,491, (17 pages).
- (19) Puetter, R.C. (PI), "Instabilities in Radiatively Driven Quasar/AGN Winds", UCSD# 866329, 12/1/86 - 11/30/88, NSF, Rejected, Amount Requested: \$111,328, (33 pages).
- (20) Puetter, R.C. (PI), "Theoretical Models of QSO Broad-Line Regions", UCSD# 866394, 2/1/87 - 1/31/90, NSF, Rejected, Amount Requested: \$161,919, (33 pages).
- (21) Puetter, R.C. (PI), "Radiative Hydrodynamics of QSO Clouds", UCSD# 866393, 2/1/87 - 1/31/89, NSF, Rejected, Amount Requested: \$69,739, (26 pages).
- (22) Puetter, R.C. (Co-PI), and Jones, B. (Co-PI), "Advanced Space IR Focal Plane Evaluation", UCSD# 875101, 11/1/86 - 10/31/87, NSF, Rejected, Amount Requested: \$59,639, (35 pages).
- (23) Puetter, R.C. (Co-PI) and Jones, B. (Co-PI), "A Mid-IR Imaging Spectrometer for the Keck Telescope", UCSD# 895049, 11/1/88 - 10/31/90, NSF, Rejected, Amount Requested: \$357,118, (75 pages).
- (24) Puetter, R.C. (PI), "Investigations of Thermal IR Imaging", UCSD# 895047, 11/1/88 - 10/31/91, NSF, Rejected, Amount Requested: \$481,282, (51 pages).
- (25) Puetter, R.C. (Co-PI) and Jones, B. (Co-PI), "Astronomical Observations with a 10 Micron Array Camera", UCSD# 886703, 7/1/89-6/30/91, NSF, Amount Awarded: \$182,200, (83 pages).
- (26) Puetter, R.C. (PI), "Numerical Studies of Broad Line Cloud Stability", UCSD# 886210, 10/1/88-9/30/89, IGPP, Rejected, Amount Requested: \$26,883, (23 pages).
- (27) Puetter, R.C. (PI), "Low Background IR Array Testing", UCSD# 895680, 2/1/89-1/31/90, NASA, Amount Awarded: \$50,498, (45 pages).
- (28) Puetter, R.C. (PI), "Investigation of Thermal IR Astronomical Imaging", UCSD# 895047, 11/1/88-10/31/91, NASA, Rejected, Amount Requested: \$481,282, (68 pages).
- (29) Puetter, R.C. (Co-PI), and Jones, B. (Co-PI), "A Mid-IR Imaging Spectrometer for the Keck Telescope", UCSD# 895049, 11/1/88 - 10/31/90, NSF, Rejected, Amount Requested: \$357,118, (87 pages).
- (30) Puetter, R.C. (PI), "Demonstration of Thermal IR Imaging Capability", Cal Space, Rejected, Amount Requested: \$24,757, (26 pages).
- (31) Puetter, R.C. (PI), "Mid-Infrared Observations of Star Forming Regions", UCSD# 906414, 7/1/90-6/30/90, Cal Space, Rejected, Amount Requested: \$21,900 (25 pages).
- (32) Puetter, R.C. (PI), "Development of Advanced Mid-IR Focal Plane Technology", UCSD# 906974, NASA, Rejected, Amount Requested: \$378,237, (89 pages).
- (33) Puetter, R.C., (Co-PI), and Jones, B. (Co-PI), "SADIE: The SAn Diego Imaging Echelle for the Keck Telescope", 7/1/90-6/30/93 NSF, Amount Awarded: \$330,078, (92 pages).
- (34) Puetter, R.C., (Co-PI), and Jones, B. (Co-PI), "SADIE: The SAn Diego Imaging Echelle for the Keck Telescope", 7/1/90-6/30/90, CARA, Amount Awarded: \$125,000, (92 pages).

- (36) Puetter, R. C., (PI), "A Large Format Thermal IR Array Camera", 7/1/91-6/30/92, UCSD# 916380, Cal Space, Rejected, Amount Requested: \$23,797, (15 pages).
- (37) Puetter, R. C., (Co-PI), and Jones, B. (Co-PI), "Extragalactic Astronomy with Arrays", UCSD# 916818, 1/1/92-12/31/93, NSF, Amount Awarded: \$205,025, (54 pages).
- (38) Puetter, R. C. (Co-PI), and Jones, B. (Co-PI), "SADIE: The SAn Imaging Echelle for the Keck Telescope", UCSD# 916875, 7/1/91-12/31/91, NSF, Amount Awarded: \$6,743, (12 pages).
- (39) Puetter, R. C., (PI), "Development of Advanced Image Processing Techniques", UCSD# 926354, 7/1/92-6/30/93, Cal Space, Rejected, Amount Requested: \$23,669, (15 pages).
- (40) Puetter, R. C., (PI), "Development of Advanced Image Processing Techniques for HST", UCSD# 935150, 1/1/93-12/31/95, NASA, Rejected, Amount Requested: \$265,450, (35 pages).
- (41) Puetter, R. C. (PI), 'Development of Advanced Image Processing Algorithms', UCSD# 936389, 7/1/93-6/30/94, Cal Space, Amount Awarded: \$13,599, (21 pages).
- (42) Puetter, R. C. (PI), 'Development of Advanced Image Processing Software', UCSD# 93-6369, 10/1/93-9/30/96, NASA, Rejected, Amount requested: \$372,319, (25 pages).
- (43) Puetter, R. C., (PI), Gull, S., (Co-I), Jones, B. (Co-I), Jura, M. (Co-I), Piña, R. K. (Co-I), Rudy, R. J. (Co-I), Skilling, J. (Co-I), Smith, H. E. (Co-I), Telesco, C. (Co-I), Tytler, D. (Co-I), and Wolfe, A. (Co-I), 'High Resolution Astronomical IR Imaging', UCSD# 945162, 1/1/94-12/31/96, NSF, Rejected, Amount Requested: \$359,901, (63 pages).
- (44) Puetter, R.C., (Co-PI), and Jones, B. (Co-PI), "SADIE: The SAn Diego Imaging Echelle for the Keck Telescope", 7/1/93-6/30/94, CARA, Amount Awarded: \$102,000, (92 pages).
- (45) Puetter, R. C. (PI), 'Development of Advanced Image Processing Software', UCSD# 945632, 4/1/94-3/31/97, NASA, Rejected, Amount Requested: \$386,048, (25 pages).
- (46) Puetter, R. C. (PI), Telesco, C. (Co-I), and Rodriguez-Espinosa, J. (Co-I), 'Advanced High Resolution Image Reconstruction Applied to NASA Space Astrophysics Data', UCSD# 955487, 2/1/95-1/31/2000, NASA, Rejected, Amount Requested: \$1,031,864, (25 pages).
- (47) Hier, R. (PI), DeForest, S. (Co-I), Puetter, R. C. (Co-I), and Schmidt, G. (Co-I), 'Video Image Reconstruction Using Advanced Bayesian Techniques', 1/1/95-6/30/95, NSF SBIR, Rejected, Amount Requested: \$65,000, (25 pages).
- (48) Puetter, R. C. (Co-PI), and Jones, B. (Co-PI), 'SADIE: The SAn Imaging Echelle for the Keck Telescope', 7/1/93-6/30/94, CARA, Amount Awarded: \$175,000, (92 pages).
- (49) Puetter, R. C. (PI), 'Investigations into Pixon-Based Image Reconstruction Algorithms', UCSD# 946875, 7/1/94-6/30/95, NSF, Amount Awarded: \$50,000, (20 pages).
- (50) Kerr, R. (PI) et al., and Puetter, R. C. (Co-I), 'Observations of Martian and Cytherean Water, Cometary Comae, and Jovian Sodium Nebula, with a Fabry-Perot Spectrometer', UCSD# 946706, 9/1/94-8/31/96, NSF, UCSD subcontract to Boston University, Rejected by NSF, Amount Requested: \$10,944 (UCSD subcontract), (5 pages).
- (51) Rubin, R. (PI), et al., and Puetter, R. C. (Co-I), 'Far-Infrared Spectroscopy of Active Galaxies', 6/30/95-5/31/96, NASA, Rejected, Amount Requested: \$56,800, (25 pages).
- (52) Sitko, M. (PI) et al., and Puetter, R.C. (Co-I), 'Observational Studies of Circumstellar Disks of PMS Protoplanetary Disk Systems', 1/1/95-12/31/97, NASA, Rejected, Amount Requested: \$386,101, (45 pages).
- (53) Puetter, R. C. (Co-PI), and Jones, B. (Co-PI), 'SADIE: The SAn Imaging Echelle for the Keck Telescope', 7/1/93-6/30/94, CARA, Amount Awarded: \$36,000, (92 pages).

- (54) Zych, A. D. (PI), et al., and Puetter, R. C. (Co-I), 'The TIGRE Mission for Gamma-Ray Astrophysics', 4/1/95-3/31/97, NASA, Rejected, Amount Requested: \$336,866, (53 pages).
 - (55) Hewitt, R. P. (PI) and Puetter, R. C. (Co-I), 'Visualization of Ecological Distribution Patterns: Application of Pixon-Based Imaging to Accoustic Observations of Antartic Krill', 1/1/95-3/31/97, NASA, Rejected, Amount Requested: \$232,985, (32 pages).
 - (56) Puetter, R. C. (PI), Dixon, D. D. (Co-I), Hudson, H. S. (Co-I), Metcalf, T. R. (Co-I), Piña, R. K. (Co-I), Rudy, R. J. (Co-I), Telesco, C. (Co-I), Tumer, T. (Co-I), Rodriguez-Espinosa, J. (Co-I), and Yahil, A. (Co-I), 'Application and Development of Advanced Image Reconstruction Algorithms for NASA Astrophysics Data", UCSD# 955990, 4/1/95-3/31/97, NASA, Amount Awarded: \$311,635, (36 pages).
 - (57) Puetter, R. C. (PI) and Yahil, A. (Co-I), 'Pixon-Based Image Reconstruction Software for the NASA Astronomy Community", UCSD# 956156, 4/1/95-3/31/98, NASA, Rejected, Amount Requested: \$317,802 (25 pages).
 - (58) Sitko, M. L., (PI) et al. and Puetter, R. C., 'Planetary System Formation", 1/1/96-12/31/98, NASA, Rejected, Amount Requested: \$358,235 (75 pages).
 - (59) Tumer, T. (PI) et al., and Puetter, R. C., 'Optimal Combination of BATSE, COMPTEL, and OSSE Data for Mapping From 0.7 to 22 MeV", 10/1/95-9/30/96, NASA, Rejected, Amount Requested: \$56,639 (35 pages).
 - (60) Puetter, R. C. (Co-PI), and Jones, B. (Co-PI), 'SADIE: The SAn Imaging Echelle for the Keck Telescope", 2/1/95-8/31/95, CARA, Amount Awarded: \$65,000, (92 pages).
 - (61) Tumer, T., (PI) et al., and Puetter, R. C., 'High Angular Resolution, Ultra Wide Field-of-View Imagaing X-Ray Astrophysics Mission: X-Ray Monitor for All Sky (XMAS)", 4/1/95-3/31/97, NASA, Rejected, Amount Requested: \$310,000, (40 pages).
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E. Presentations

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|------|--|-------------------|
| (1) | Puetter, R.C., "Review of Infrared Observations of Quasi-Stellar Objects", Summer Workshop on Quasars and Active Galactic Nuclei, Santa Cruz, (July 1978). | INVITED REVIEW |
| (2) | Puetter, R.C., "Radiative Transfer Models of Quasar Emission Lines", UCSD/Caltech Workshop on Dust in Quasars and Active Nuclei of Galaxies, San Diego (August 1980). | INVITED REVIEW |
| (3) | Puetter, R.C., "Recent Developments in Observational and Theoretical Studies of Active Extragalactic Objects", Meeting of the Astronomical Society of the Pacific, San Diego, (June 1982). | INVITED REVIEW |
| (4) | Puetter, R.C., "Radiative Transfer Effects in Active Extragalactic Objects", 4th Fourth Space Sciences Laboratory Conference on Active Galaxies in the Infrared, Berkeley, CA, (January 1983). | INVITED TALK |
| (5) | Puetter, R.C., "The Theory of QSO Broad-Line Regions", Astrophysics Seminar, University of Illinois, Urbana, Illinois, (March 1983). | SEMINAR |
| (6) | Puetter, R.C., "Near-IR Ground-Based Detector Systems", Recent Developments in Detection Techniques for Infrared, Optical, and X-ray Bands, Srinagar, India (July 1986). | INVITED REVIEW |
| (7) | Puetter, R.C., "Mid-IR Ground-Based Detector Systems", Recent Developments in Detection Techniques for Infrared, Optical, and X-ray Bands, Srinagar, India (July 1986). | INVITED REVIEW |
| (8) | Puetter, R.C., "Far-IR Detector Systems", Recent Developments in Detection Techniques for Infrared, Optical, and X-ray Bands, Srinagar, India (July 1986). | INVITED REVIEW |
| (9) | Puetter, R.C., "Space Detector Systems for IR Astronomy", Recent Developments in Detection Techniques for Infrared, Optical, and X-ray Bands, Srinagar, India (July 1986). | INVITED REVIEW |
| (10) | Puetter, R.C., "Noise Sources in IR Detector Systems", Recent Developments in Detection Techniques for Infrared, Optical, and X-ray Bands, Srinagar, India (July 1986). | INVITED REVIEW |
| (11) | Puetter, R.C., "The Keck Ten Meter Telescope", Developments in Detection Techniques for Infrared, Optical, and X-ray Bands, Srinagar, India (July 1986). | INVITED REVIEW |
| (12) | Puetter, R.C., "The Role of Stars in QSO/AGN Broad-Line Regions" UCSD Astrophysics Seminar (1987). | SEMINAR |
| (13) | Puetter, R.C., "Bloated Stars in QSO/AGN Emission Line Regions" IGPP Seminar, Lawrence Livermore National Labs. (1988). | SEMINAR |
| (14) | Puetter, R.C., "The Stability of QSO Broad Emission Line Clouds" UCI Astrophysics Seminar (1989). | SEMINAR |
| (15) | Puetter, R.C., "A Random Walk Through IR Astronomy at UCSD" UCLA Astrophysics Seminar (1991). | SEMINAR |
| (16) | Puetter, R. C., "Pixion-Based Image Reconstruction Algorithms", Space Telescope Science Institute, (May 1993). | SEMINAR |

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| (17) | Puetter, R. C., "Advanced Image Reconstruction Methods", for Stellar Astronomers in California: Past and Future, UCLA, a Symposium to Celebrate 80th Birthdays of Lawrence Aller and Daniel Popper, (September 1993). | INVITED TALK |
| (18) | Puetter, R. C., "New High Resolution Image Reconstruction Algorithms", UCSC, (September 1993). | SEMINAR |
| (19) | Puetter, R. C. "New High Resolution Image Reconstruction Algorithms", UCSD, (September 1993). | SEMINAR |
| (20) | Puetter, R. C. "Fractal Pixon Based Image Reconstruction Methods", Space Telescope Science Institute, Image Restoration Workshop, (November 1993). | INVITED TALK |
| (21) | Puetter, R. C. "Advanced Image Reconstruction Methods", University of Texas, Austin, (November 1993). | SEMINAR |
| (22) | Puetter, R. C. 'A New Method for Bayesian Estimation", Southwest Fisheries", San Diego, CA (November 1993). | SEMINAR |
| (23) | Puetter, R. C. 'Pixon-Based Image Reconstruction", Los Alamos National Labs, Los Alamos, NM (January 1994). | SEMINAR |
| (24) | Puetter, R. C. "Pixon Quantitfaction of Picture Information Content with Application to Image Reconstruction", University of California, Berkeley, (January 1994). | SEMINAR |
| (25) | Puetter, R. C. "Pixons and Bayesian Image Reconstruction", S.P.I.E. meeting, San Diego (July 1994). | INVITED TALK |
| (26) | Puetter, R. C., "Pixon-Based Image Reconstruction and the Quantification of Image Information Content", SUNY, Stony Brook (December 1994). | SEMINAR |
| (27) | Puetter, R. C., 'Eyes on the Universe: Modern Image Reconstruction", Popular Lecture, Reuben H. Fleet Space Theater, (February 1995). | PUBLIC LECTURE |
| (28) | Puetter, R. C., 'Information, Language, and Pixon-Based Bayesian Image Reconstruction", NRAO, Socorro, NM (November 1995). | SEMINAR |
| (29) | Puetter, R. C., 'The Image Restoration/Reconstruction Problem", 1995 IAC Winterschool, Tenerife, Spain (December 1995). | INVITED LECTURE |
| (30) | Puetter, R. C., 'Language and Information Content", 1995 IAC Winterschool, Tenerife, Spain (December 1995). | INVITED LECTURE |
| (31) | Puetter, R. C., 'Pixon-Based Image reconstruction/Restoration", 1995 IAC Winterschool, Tenerife, Spain (December 1995). | INVITED LECTURE |
| (32) | Puetter, R. C., 'The Restoration of Astronomical Images", 1995 IAC Winterschool, Tenerife, Spain (December 1995). | INVITED LECTURE |
| (33) | Puetter, R. C., 'Image Reconstruction of Complexly Encoded Data", 1995 IAC Winterschool, Tenerife, Spain (December 1995). | INVITED LECTURE |
| (34) | Puetter, R. C., 'Information, Language, and Pixon-Based Bayesian Image Reconstruction", IAC, Tenerife, Spain (December 1995). | SEMINAR |
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| (35) | Puetter, R. C., "The Pixon Method: Theory and Applications", 1997 Maximum Entropy Conference. (August 1997). NEW | INVITED LECTURE |
| (36) | Puetter, R. C., "Pixon Image Reconstruction and Compression: Theory and Applications", SPIE Meeting (July 1997). NEW | INVITED LECTURE |

(37) Puetter, R. C., "The Pixon Method", ADASS 98. (October 1998). **NEW**

INVITED
TALK

F. Public Service

— 1986 to 1988 —

- Served as an Adjunct Lecturer to the Physics Department.
- Graduated my first Ph. D. student, Philip Petersen (June 1987).
- Acted as research advisor to 2 students (Krinsky and Holland).
- Gave substitute lectures for several different physics courses.
- Took the primary responsibility for writing the draft version of the CASS Long-Range Academic Plan (1st, 2nd, and 3rd drafts were prepared by R. Rothschild and myself with aid from G. Burbidge, the final draft was prepared by E.M. Burbidge).
- Took the primary responsibility for writing the CASS Computer Plan for presentation to the University Administration.
- Served as a committee member on CARA's Infrared Working Group Committee, the Optical Working Group Committee, the Data Acquisition Working Group Committee for the Keck Telescope, and the University of California Observatories Near IR Instrumentation Committee.
- Served as the Chair of the CASS Education Committee, member of the Ad Hoc Committee for CASS Computer Policy, and a member of the CASS EPC. I am also the CASS Representative to the Physics Department Computer Committee and currently organizing (with aid from R. Cohen) the 1988/89 Winter Quarter Astrophysics Seminars.
- Organized 2 Marlar Lectures as well as CASS's Forum on the Future of Man in Space.
- Served as a consultant to the Aerospace Corporation, to Science Applications International Corporation, to Western Research Corporation, and to Scripps Inst. of Oceanography.
- Reviewed proposals for the NSF (1) and Cal Space (2), and refereed 5 papers for the Ap. J.
- Was a "Participating Guest" at Lawrence Livermore National Labs.
- Collaborated with personnel from The University of Minnesota, The Naval Research Labs, The University of Hawaii, Aerojet ElectroSystems Corporation, The Aerospace Corporation, Lawrence Livermore National Labs, and The University of California, Santa Cruz.

— 1988 to 1990 —

- Served as an Adjunct Lecturer to the Physics Department.
- Graduated a Ph. D. student, Irwin Krinsky (November 1989).
- Served on the thesis committee of 2 students (Holland and Moore).
- Gave substitute lectures for several different physics courses.
- Served as Chairman of the University of California Observatories Infrared Working Group, and served on the Infrared Working Group for the Keck Telescope.
- Served as Chairman of CASS's Education Committee, member of CASS's Computer Policy Committee, CASS's EPC, and the UCSD Physics Department Computer Committee.
- Organized a Marlar Lectureship (William Fowler).
- Acted as consultant and Co-Investigator for the Spanish PHOT-S experiment for ESA's ISO experiment.
- Acted as an invited scientific advisor on the University of Hawaii's "Center for Infrared Array Astronomy and Technology Planning Workshop".
- Collaborated with the University of Calgary, aiding them in construction of a new 8-14 spectrometer by providing the array, electronics schematics, and software necessary to construct and operate the instrument.
- Acted as a Faculty Mentor in the Howard Hughes Medical Institute Undergraduate Science Enrichment Program at UCSD.

- Served as a special outside reviewer for proposals for CTIO. Reviewed proposals for Cal Space (5), papers for the Ap. J. (3) and the P.A.S.P. (1), and served as a review panel member for NASA ADP proposals.
- Served as a consultant to the Aerospace Corporation, Science Applications International Corporation, and Gamma Metrics.

— 1990 to 1992 —

- Served as an Adjunct Lecturer to the Physics Department.
- Served on the thesis committee of 2 students (Piña and Moore).
- Gave substitute lectures for several different physics courses.
- Gave a 1 day seminar on astronomy for elementary school teachers.
- Served as Chairman of the University of California Observatories Infrared Working Group, served on the Keck Infrared Working Group, served on the Keck Data Acquisition Working Group, and served on the Keck Active Optics Working Group.
- Served as Chairman of CASS's Education Committee, served as a member of CASS's Executive Policy Committee, and was also a member of CASS's Building Committee.
- Collaborated with the University of Calgary, aiding them in construction of a new 8-14 spectrometer by providing the array, electronics schematics, and software necessary to construct and operate the instrument.
- Collaborated with Charles Telesco (NASA) in the construction of a user instrument, an imaging mid-IR spectrometer, for the IRTF.
- Reviewed proposals for Cal Space (5) and the NSF (1), and papers for the Ap. J. (3) and the P.A.S.P. (1).
- Served as a consultant to the Aerospace Corporation, Science Applications International Corporation, Gamma Metrics, and Digivision.

— 1993 to 1995 —

- Gave substitute lectures for several different physics courses.
- Gave a popular lecture at the Ruben Fleet Space Theater on Astronomical Image reconstruction techniques.
- Served as a member of the University of California Observatories Infrared Working Group, the Keck Infrared Working Group, and the Science Advisory Team for UCLA's Near IR Spectrometer (NIRSPEC) for the Keck Telescope..
- Served as Chairman of CASS's Education Committee and as a member of CASS's Executive Policy Committee.
- Served on a NASA review panel for IR proposals (1993 IR NRA).
- Reviewed proposals for Cal Space, the NSF, and papers for the Ap. J.
- Served as a consultant to the Aerospace Corporation and Digivision.
- Collaborated with Charles Telesco (NASA) in the construction of a user instrument, an imaging mid-IR spectrometer, for the IRTF and with Rick Rudy of the Aerospace Corporation in the design and construction of a near-IR camera and a near-IR spectrometer for the Lick and University of Wyoming Observatories..
- Collaborated with numerous astronomy groups around the country, helping them to apply pixon-based image reconstruction methods for their applications. Of particular importance are the custom pixon-based image reconstruction codes now being developed and used for the Yokoh satellite X-ray imaging experiments, the GRO COMPTel and OSSE instruments, and the new, upcoming version of the National Radio Astronomy Observatories' image processing package, AIPS++.

— 1996 to 1997 —

- Served as a member of the University of California Observatories Infrared Working Group.
- Served on a NASA review panel for IR proposals.
- Reviewed proposals for Cal Space, the NSF, and papers for the Ap. J.
- Served as a consultant to the Aerospace Corporation and Digivision.
- Collaborated with Charles Telesco (NASA) in the construction of a user instrument, an imaging mid-IR spectrometer, for the IRTF and with Rick Rudy of the Aerospace Corporation in the design and construction of a near-IR camera and a near-IR spectrometer for the Lick and University of Wyoming Observatories..
- Collaborated with numerous astronomy groups around the country, helping them to apply pixon-based image reconstruction methods for their applications.

— 1998 to 2001 —

- Served on a NASA review panel for NGST IR proposals.
- Gave lectures at the UCO 2001 AO Summer School.
- Reviewed instrumentation proposals for the large Spanish Telescope (10 meter) being built in the Canary Islands..
- Reviewed papers for the Ap. J.
- Served as a consultant to the Aerospace Corporation.
- Collaborated with numerous astronomy groups around the country, helping them to apply pixon-based image reconstruction methods for their applications. Of particular importance was the delivery of a Pixon library for the National Radio Astronomy Observatories' image processing package, AIPS++.
- Made a popular science television show featuring myself and Amos Yahil as the sole guests. The show centered on the Pixon method.