

## JEFFREY T. BAKER

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### CAREER SPECIALTY HIGHLIGHTS

Laser Adaptive Optical Experimentalist with Electronics and Control Systems. Specializing in Laser Acquisition, Tracking, and Pointing, Rangefinding, Remote Wind Speed measurement, Laser Frequency-Stabilized High Powered Lasers, Fiber Laser Arrays, Fast-Steering Mirrors, Robotic Gimbals, Analog and Digital Controls, Holography, Optical Array Imaging, precise Pointing and Tracking, Data Acquisition and Realtime interfaces with Ground Loop and EMI Mitigation, Opto-Mechanical Vibration and Jitter Testing, Accelerometer-based Image Stabilization, etc. Hard-core Advanced Analog and RF Electronics knowledge. Proven hardware programming skills. Proven numerical simulations skills. Father. Photographer. Yogi instructor level.

### EDUCATION

**High Tech. Small Business Owner Experience since 1991.** Includes knowledge of intellectual property, export control, manufacturing and sales of opto-electronic devices in the US, importing and internet sales of high-tech goods from Europe to here in the US, contracting directly with all DoD agencies and DoD Contractors, and Universities, and small business startups. I cannot overemphasize the value of proper negotiations skills and knowledge of private and governmental contracting caveats to a new high tech small business when attempting to engage in any of these highly profitable business models.

**MSEE Degree, Optoelectronics Option**, University of New Mexico, May 1988. Additional graduate level course work in plasma physics, pulsed power, EMI, antennas and other electro-magnetics.

**BSEE Degree, with Distinction**, University of Kentucky, May 1986. Emphasis on lasers, controls, optics, and electrooptical devices.

### EXPERIENCE

**2015-Baker International Technologies, LLC.** ([www.BakerITllc.com](http://www.BakerITllc.com)) "An Optics and Optical Devices Import Company, helping U.S. firms and institutions import advanced optics and optical technologies from all over the world."  
**1991-present—Baker Adaptive Optics** ([www.BakerAdaptiveOptics.com](http://www.BakerAdaptiveOptics.com)) **Consulting. Contract Work. Optical Imports. Original Products. Foreign labor procurement.**

--**Consulting** in the areas of laser beam control, optics, image stabilization, electronics interfacing, motion control, data acquisition and analog and digital realtime control systems with NPS, NRL, ARL, USAFA and AFRL, SNL, etc.

--Spending a lot of time developing **highest performance low noise optical sensor electronics** using bootstrapping jfet's ala Hobbs, cascode techniques, filters and lock-in amplifier circuitry.

--Ongoing support for **Boeing/Maui** for the FASOR Sodium Guidestar Source, contracts for Activation, training, upgrades and maintenance.

--Currently Support **Sandia National Laboratories** on advanced lasers and sensors systems.

--Currently Support **ZmodDynamics, LLC** for biomedical sensor systems.

--**Support Sandia National Laboratories** on advanced imaging projects by delivering and installing an **Extended Range Fast Steering Mirror (ERFSM)**. It was then used in **Terrestrial Image Enhancement/active stabilization** using inertial techniques, including autofocus system.

--Support the HUA, Inc./US AF Academy on prototype **Holographic Adaptive Optical Realtime control system** using both Okotech and Boston Micromachines deformable mirror and **Avalanche Photodiode Array** sensors.

--Successfully **integrated a Okotech deformable mirror system closed-loop** with USAF Academy laboratory holographic wavefront sensor system via Lockheed-Martin, rapidly saving a multi-million-dollar effort.

--Delivered **Fast Advanced Tracker System (FATS)** and **Extremely Agile Relay Laser (EARL)** robotic laser handling systems to the Naval Postgraduate School. Upgraded the AFRL Relay Mirror Demo to include fast tracking.

--Delivered the **Advanced Starlight Optical Tracker** System with nonlinear adaptive filtering to New Mexico State University. System has 30,000:1 dynamic range for closed-loop stability (normally 10:1).

--Delivered two **ATP demonstration relay mirror systems** to the Naval Postgraduate School in Monterey, CA.

--Developed and deployed numerous **electro-optical realtime control systems** using novel embedded CISC architectures.

--Developed and deployed a portable high speed **Atmospheric Seeing Monitor** to NRL for Anderson Mesa, AZ, using DIMM and D/r0 ratio analysis techniques.

--Developed and deployed an **accelerometer based optical image stabilization system** for the Army Research Laboratory. The system uses a pair of 3-axis MEMS accelerometers spaced a given distance apart on the telescope body. As the telescope is mechanically disturbed, optical jitter is compensated for using a tip/tilt mirror feed-forward driven by the twice time-integrated filtered difference signals of the two sets of sensors.

--**Retail mfg. of high performance Fast Steering mirrors.** Bandwidths now exceed 3kHz with <20nanoRads noise.

--**Novel wavefront sensor design** for the Univ. of Puerto Rico. Project includes custom c++ software linking hardware with Matlab environment. Also responsible for optical designs, parallel dsp digital wavefront reconstructor electronics, implementing complex real-time numerical algorithms, etc. There are many smaller subprojects including complete pointing and tracking systems and sensors.

--Currently the **US importer/distributor** for a wide variety of Flexible Optical/Okotech adaptive optical components.

**1998-present--Construction of private laboratory for optics/electronics/machining.**

--Optics laboratory includes a 4'x8' Newport optics bench, NBS traceable optical power meters, HeNe lasers and laser diodes, and many various stock optical components for advanced imaging, interferometry, and sensors work.

--Electronics laboratory includes standard and surface mount capabilities, circuit board design/layout/simulation tools, and much test equipment including Tektronix analog and digital oscilloscopes, National Instruments data acquisition, signal generators, and stock components. Software tools include Zemax for Optical Simulations, Labview and C++ for Data Acquisition and Control, Simulink+Matlab, and Scicos/XCOS for Image Analysis and Controls Design, MS Visual Studio for C++ Software Creation, pcb design software, Microsoft Office, and Oracle Open Office.

**1988-August 2014—Boeing/LTS, Kirtland AFB, NM (over 26 incredible years!)**

--March 2014, Completed construction, acceptance testing, and delivery of the **2nd 50W 589nm Sodium Guidestar Source** to the AFRL AMOS facility in Maui, HI.

--Feb. 2013, Received, as Laser Build Team Lead, the prestigious 2012-2013 Boeing Directed Energy Systems **Engineering Team of the Year Award** for our outstanding Sodium Guidestar work, delivering a successful highly complex product to AFRL and getting funded to do it again.

-- **Awarded full (multi-\$M) funding and granted a new laboratory** for building a second Sodium Guidestar system for the sister Hawaiian AMOS facilities during this difficult time of some of the worst funding cuts in DoD history. Presented the winning trade study to AFRL and single-handedly scored victory when set up against a highly competitive German/Canadian system alternative.

--**Lead Laser/Controls/Electronics/Software Engineer** for the installed and fully operational **50+Watt Class Sodium Guidestar Adaptive Optical Beacon Source** at the NM **Starfire Optical Range**. Developed diffraction limited high power YAG ring oscillators at 1.319um and 1.064um, and integrated into the most efficient doubly-resonant LBO-based Sum-Frequency-Generators ever made for the creation of 589nm (D2a line of Na). **Developed novel hybrid servos** for ring injection locking based on the **Pound-Drever-Hall technique**, and authored all essential realtime control software for the multi-million dollar instrument using a pair of embedded controllers of my choosing. A total of 6 simultaneous control loops keep the rings locked and tuned, and 25 additional loops keep the system running steadily.

--**First to demonstrate Target-In-the-Loop High Powered Laser Beam Array Cophasing** and its unique advantages when used with fiber arrays.

--**Technical lead for multi-kilowatt fiber laser phased-array system using LOCSET** technology (as a potential tactical weapon). Responsibilities include outgoing laser array integration and active phasing system adaptive optics.

--**Developed LOCSET**, the robust and successful 16-channel version of the **laser array cophasing hardware** using RF, analog, and digital techniques, based on the earlier prototypes of Thomas Shay.

--**Task leader for Acquisition, Tracking, and Pointing System (ATP)**. Used Baker Adaptive Optics tip/tilt mirror technology to "chase" a hand held 532nm green laser pen spot with a 633nm computer controlled system. System uses multi-spectral video trackers operating at 30Hz frame rates, or 1.6kHz frame rate Dalsa cameras, and 30kHz BW analog linear effects sensors. **Realtime control** is achieved through the PCI bus using commercial off the shelf (COTS) components.

--**Task leader for membrane mirror adaptive optics program**, similar to above.

--**Task leader for air-path and fiber coupled telescopic array imaging** experiments with current emphasis of adding liquid crystal adaptive optics. Developed scanning **white-light fringe acquisition system** capable of acquiring and locking onto fringes in milliseconds over a range of several hundred waves, while at the same time controlling tip/tilt. Developed an **innovative optical correlator fringe position sensor** for the above, and demonstrated robust operation with external disturbances.

--Complete **High Speed Tracker System** development, including low-light-level tracker tip/tilt sensors using avalanche photodiodes, the making and design of a high accuracy, low cost 700Hz beam steering mirror, and analog electronic /+DSP control system development and implementation. Deployed two such systems successfully in Maui on the dual 1.2meter MOTIF telescopes on Mt. Haleakala, coupled light from the star Arcturus into single-mode fibers and recombined it to **white-light stellar interferometric** accuracy, demonstrating the world's first fiber-coupled telescopic array. Work with GENIV image intensifiers, position sensitive and quadrant detectors of all types including quadrant avalanche photodiode arrays. Adept at high quantum efficiency photon-counting techniques.

--**Evaluated thermal conditioning for beam path** wavefront turbulence distortion of incoming/outgoing beam trains in the Auxiliary Beam Director (ABD) at the Starfire Optical Range.

--Support **high energy nonlinear optical frequency doubling** experiments with the Photolytic Iodine Laser (PIL) producing 5.6Joules of 658nm light. Measured the conversion efficiencies of KTP, LBO, BBO, and LiIO<sub>3</sub> crystals vs. length, power density, energy density, and tuning angle, as well as damage thresholds, gathering previously unknown data for these materials at 1.3um.

--Support **μRadian-accuracy satellite pointing/tracking/speckle holography imaging** experiments at the Starfire Optical Range (SOR) telescope facility.

--Operate and continuously upgrade the world class state-of-the-art 50+ Joule pulsed **Photolytic Iodine Laser** system used in **Active Imaging** experiments at the Starfire Optical Range. Completed high volume C<sub>3</sub>F<sub>7</sub>I fuel flow system upgrade providing higher pulse repetition frequency, and installed custom designed low-inductance spark gap for shorter temporal pulse width. Proposed to replace gain cell and unstable resonator optics with new efficient and flexible design, using innovative Zeeman-effect Q-switching, and optical filtration of UV pump light, improved thermal management, and enhanced system automation.

--**Subtask leader** for a team conducting highly successful **Laser Beam Diagnostics** and design of multi-kilojoule pulsed power for the PIL. Beam diagnostics include near- and far-field beam profiles, coherence length, polarization state, temporal profile, average power and shot-to-shot energy. Real-time data acquisition and numerical analysis of the above. Numerical modeling of Xenon flashlamp circuits, including transient magnetic field distributions affecting laser gain medium. Responsible for the safe, effective implementation of a 12 flashlamp, 20kJoule pulsed power system operating at 40kVolts, and total EMI shielding of laser device and diagnostics. Fiber optic remote control & monitoring systems. Improved laser output power and efficiency by 30%, reduced pulse width from 13 to 7.0μS FWHM, and improved fuel handling procedures.

--**Subtask leader** for actively **deformable mirror/wavefront sensing integration** experiments. Deformable mirror actuated by a 10x10 PZT array, with a 10x10 Hartmann type wavefront sensor with real-time dedicated MASSCOMP processor. Work involved optical alignment, feedback control loop stability analysis and developing numerical algorithms for optical wavefront correction and manipulation.

--Precision, **tracking optical frequency shifting** by acousto-optical modulators for speckle imaging experiment.

--**Subtask leader** for a team conducting optical, electro-optical, electrical, and thermal tests on the new class of ceramic Hi-T<sub>c</sub> superconductors.

--DOD "SECRET" cleared.

**1992--Short Course Instructor at the University of Phoenix**, Albuquerque, NM. Taught paid 8-hour short courses on ElectroMagnetic Interference (EMI) phenomenon, from theory to practical fixes.

**1992--Engineering Consultant to the Department of Physics & Astronomy** at UNM. Designed and constructed custom very low noise laser diode power supply.

**1989-1991--Engineering Consultant to the Center for High Technology Materials** (Solid State Devices Group) at UNM campus. Designed and constructed several state-of-the-art CW and high power, high speed pulsed current sources.

**1986-1988--Research Assistant to the University of New Mexico**. Developed a reliable transverse discharge copper vapor laser system. Involved high temperature materials, vacuum and sophisticated multi-kilohertz pulsed power technologies.

**1986--Sandia National Laboratories Outstanding Student Summer Program**. Designed & constructed a photonic x-ray sensor using high speed laser diodes and single mode fiber optics.

--DOE "Q" cleared.

**1985--Laser Laboratory Assistant to the University of Kentucky**. Constructed 10Joule Neodymium-glass laser system from scratch. Performed Q-switching using saturable dye (Kodak 9860) and acoustooptic modulator techniques.

**1985--Audio/RF service engineer** for Barney Miller's electronics retail/service center (KY's largest). Prototyped analog filter cascade for an entrepreneur.

**1982--Electronic Design Project**. Designed & constructed a variable-rate high voltage pulse generator for nitrogen laser trigatron spark gap switching.

**1981-1982--Constructed molecular nitrogen lasers** and optically pumped organic dye lasers (R6G). Advanced class amateur radio license status.

--**Advanced Class Radio Amateur Licensee** (call sign **KE4YN**). Constructed various radio transmitters, receivers, and antennas. *Learned enough electronics to benefit a lifetime of R&D work.*

## PUBLICATIONS

(53 and counting!)

"Implementing Digital Feedback Controls for the Multiple Simultaneous Ring Cavities in the FASOR-X System," J.T.Baker, D.Gallant, A.Lucero, H.Miller, J.Stohs, AMOS Tech.Conf. Proc. 2011/Instrumentation.

"Phasing of High Power Fiber Amplifier Arrays," T.Shay, J.T.Baker, A.Sanchez, C.Robin, C.Vergien, A.Flores, C.Zeringue, D.Gallant, C.Lu, B.Pulford, T.Bronder, A.Lucero., Advanced Solid-State Photonics (ASSP) 2010 paper: AMA1.

"Phase Locking an Array of Fiber Amplifiers onto a Remote Object," B.Pulford, T.Shay, J.T.Baker, A.Flores, C.Robin, C.Zeringue, D.Gallant, A.Sanchez, C.Lu, A.Lucero., Conference on Lasers and Electro-Optics (CLEO), 2010 paper:

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"Novel All Digital Ring Cavity Locking Servo," J.T.Baker, D.Gallant, A.Lucero, H.Miller, J.Stohs, T.Shay, AMOS Tech.Conf. Proc. 2009/Instrumentation.

"AFRL Advanced Electric Lasers Branch: construction and upgrade of a 50-watt facility class sodium guidestar pump laser," T. Justin Bronder, Harold Miller, Jonathan Stohs, Jeff Baker, Art Lucero, Dave Gallant, AFRL technical report, 2009.

"High-power phase locking of a fiber amplifier array," T.Shay, J.Baker, A.Sanchez, C.Robin, C.Vergien, C.Zeringue, D.Gallant, C.Lu, B.Pulford, T.Bronder, A.Lucero, Proc. of the SPIE Vol. 7195, 2009.

"Reference Beam Free Phase Locking of a High Power Fiber Array," T.Shay, J.Baker, C.Robin, C.Vergien, C.Zeringue, D.Gallant, A.Sanchez, B.Pulford, C.Lu, A.Lucero., Proc. of the SSDLTR 2009.

"Phase Locking of a Fiber Array onto a Remote Object," B. Pulford, T.Shay, J.Baker, A.Flores, C.Robin, C.Vergien, C.Zeringue, D.Gallant, A.Sanchez, C.Lu, A.Lucero., Proc. of the SSDLTR 2009.

"Power Scaling of a Diffractive Fiber Laser Beam Combiner to 400W with High Efficiency," M.Wickham, P.Thielen, J.Ho, G.Goodno, R.Rice, E.Cheung, J.Rothenberg, D.Gallant, Jeffrey T. Baker, A.Lucero, A.Sanchez, T.Shay, C.Robin, C.Vergien, C.Zeringue, IEEE J. of Q.E. 2009.

"A novel technique for electronic phasing of high power fiber amplifier arrays," T.Shay, J.Baker, A.Sanchez, et. al. Proc. of the SPIE vol. 7386, Aug. 2009.

"High Efficiency Coherent Beam Combiner," M.Wickham, P.Thielen, J.Ho, G.Goodno, R.Rice, E.Cheung, J.Rothenberg, D.Gallant, Jeffrey Baker, A.Lucero, A.Sanchez, T.Shay, C.Robin, C.Vergien, C.Zeringue

"Active Phasing of Fiber Amplifier Arrays Using LOCSET," T.Shay, C.Robin, C.Vergien, C.Zeringue, C.Lu, J.Baker, D.Gallant, Solid State Diode Laser Tech. Rev. 2008.

"Electronic Beam Combination of Fiber Amplifier Arrays," T.Shay, J.Baker, C.Robin, C.Vergien, C.Zeringue, D.Gallant, T.Bronder, D.Pilkington, C.Lu, A.Sanchez, Frontiers in Optics 2008.

"Narrow linewidth coherent beam combining of optical fiber amplifier arrays," T.Shay, V. Benham, J.Baker, A.Sanchez, D. Pilkington, D.Nelson, C.Lu, Proc. of the SPIE vol. 6451, March 2007.

"Self-Synchronous and Self-Referenced Coherent Beam Combination for Large Optical Arrays," T.M.Shay, V. Benham, J.T.Baker, A. Sanchez, D. Pilkington, A. Lu Chunte, IEEE Journal of Selected Topics in Quantum Electronics, Vol. 13, No.3, May/June 2007.

"First Experimental Demonstration of Fiber Amplifier Array Phase Locking without an External Reference Beam," T.Shay, V.Benham, J.T.Baker, A.Sanchez, D.Pilkington, D.Nelson, C.Lu, Conference on Lasers and Electro-Optics (CLEO), paper CWD1, 2007.

"First Experimental Demonstration of Self-Synchronous Phase Locking of an Optical Array," T.M.Shay, V.Benham, J.T.Baker, B.Ward, A.D.Sanchez, M.A.Culpepper, D.Pilkington, J.Spring, D.J.Nelson, A.Lu Chunte, Optics Express, Vol. 14, Issue 25, pp. 12015-12021, Dec. 11 2006.

"Self-referenced locking of optical coherence by single detector electronic-frequency tagging," T. M. Shay, V. N. Benham, J. B. Spring, B. G. Ward, F. Ghebremichael, M. A. Culpepper, A. D. Sanchez, J. T. Baker, D. E. Pilkington, R. W. Berdine, [6102-31] the upcoming SPIE LASE 2006.

"Non-mechanical zoom system," T Martinez, DV Wick, DM Payne, JT Baker, SR Restaino, Sensors 2004.

"Kilometer scale primary collector telescope," TD Ditto, JF Friedman, JT Baker, Photonics North 2004: Optical Components and Devices, 2004.

"Developing a portable NRL fast frame rate seeing monitor," E Oh, JL Murphy, JT Baker, GC Gilbreath, et. al., SPIE Conf on Remote Sensing and Modeling of Ecosystems for Sustainability, 2004.

"Results from a portable Adaptive Optics system on the 1 meter telescope at the Naval Observatory, Flagstaff

Station," S.R. Restaino, G.C. Gilbreath, D.M. Payne, J.T. Baker, T. J. Martinez, SPIE Conf. on Interferometry for Optical Astronomy II, 2003.

"Low cost innovative telescope," J.F. Friedman, J.T. Baker, T. J. Martinez, J Payne, SPIE Conf. on Interferometry for Optical Astronomy II, 2003.

"Liquid crystal technology for adaptive optics: an update," S. Restaino, D.M.Payne, JTBaker, et. al., Proceedings of the SPIE, Vol. 5003, 30 April 2003.

"Adaptive optics approach for prefiltering of geometrical fluctuations of the input laser beam of an interferometric gravitational waves detector," E. Calloni, J. T. Baker, F. Barone, R. Derosa, L. di Fiore, L. Milano, S. R. Restaino, Review of Scientific Instruments 01/2003; 74:2570-2574

"Bifocal relay mirror experiments on the NPS three axis spacecraft simulator," Michael G. Spencer, Vince Chernesky, Jeffrey Baker, Marcello Romano, AIAA Guidance, Navigation, and Control Conference and Exhibit, AIAA 2002-5031, August 2002.

"Active multimodal control of a floppy telescope structure," Jeffrey Baker, S. Restaino, Ty Martinez, J. Friedman, Proc. SPIE Vol 4825 pp 74-81, Sept. '02.

"Wide-field-of-view foveated imaging system using a liquid crystal spatial light modulator," D. Wick, Ty Martinez, Jeffrey Baker, D. Payne, B. Stone, S. Restaino, Proc. SPIE Vol. 4715, p58-62, July '02.

"EAGLE: relay mirror technology development," M. Hartman, S. Restaino, Jeffrey Baker, D. Payne, J. Bukley, Proc. SPIE Vol 4724, p108-115 June '02.

"Use of accelerometers to reduce dynamic range requirements in an adaptive optics system," Jeffrey Baker, Ty Martinez, S. Restaino, D. Wick, D. Payne, G. Gisler, J. Friedman, Proc. SPIE Vol. 4493, p 198-206, Feb '02.

"New liquid crystal devices for adaptive optics," S. Restaino, Jeffrey Baker, D. Payne, Proc. SPIE Vol 4493 p 41-45, Feb '02.

"Adaptive Optics correction of geometrical fluctuations of Virgo input laser beam: preliminary results," S. Avino, F. Barone, Jeffrey Baker, E. Calloni, R. DeRosa, L. DiFiore, L. Milano, S. Restaino, Proc. SPIE Vol. 4493, p 156-165, Feb '02.

"An adaptive optics approach to the reduction of misalignments and beam jitters in gravitational wave interferometers" J. T. Baker, F. Barone, E. Calloni, R. De Rosa, L. Di Fiore, A. Eleuteri, L. Milano, S. Restaino, K. Quijiani, Classical and Quantum Gravity 01/2002; 19(7):1813-1818.

"State of the art in liquid crystal technologies for wavefront compensation: an AFRL perspective," S. Restaino, Jeffrey Baker, D. Dayton, D. Werling, S. Browne, Proc SPIE Vol 4167, Jan '01.

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"Experimental results from an adaptive optics system based on a dual frequency nematic device," S. Restaino, Jeffrey Baker, D. Dayton, L. Finkner, Proc. SPIE Vol. 3955 p 54-57, March '00.

"On the use of dual frequency nematic material for adaptive optics systems: first results of a closed-loop experiment.," S. Restaino, D. Dayton, S. Browne, J. Gonglewski, J. Baker, S. Rogers, S. McDermott, J. Gallegos, M. Shilko, 3Jan00/Vol.6, No.1/OPTICS EXPRESS.

"Innovative low-cost adaptive optics programs: a new mind-set emerges," Jeffrey Baker, J. Friedman, I. Percheron, L. Finkner, S. Restaino, G. Loos, Proc. SPIE Vol 3749 p 757.

"Dual frequency nematic devices for wavefront control: Preliminary results," S. Restaino, D. Dayton, J. Baker, SPIE Conf. On High-Resolution Wavefront Control: Methods, Devices, and Applications, Denver, CO, July 99.

"Holographic Compensation of Severe Dynamic Aberrations in Membrane-Mirror Based Telescope Systems," M. Gruneisen, T. Martinez, D. Wick, J. Wilkes, J. Baker, I. Percheron, SPIE Conf. On High-Resolution Wavefront Control: Methods, Devices, and Applications, Denver, CO, July 99.

"Design and implementation of a low-cost starlight optical tracker system with 500Hz active tip/tilt control," J. Baker,

R.Dymale, R.Carreras, S.Restaino, Computers & Electrical Engineering 00 (1998) 1-11.

"The New University of Puerto Rico / Air Force Research Laboratory Initiative in Adaptive Optics Interferometry." J.Friedman, G.Loos, J.Baker, L.Finkner, D.Sanchez, I.Percheron, S.Restaino, SPIE/Kona '98 Adaptive Optics Conference.

"Two telescope interferometric testbed to develop low cost atmospheric correction techniques for high angular resolution," L.Finkner, I.Percheron, J.Baker, D.Sanchez, SPIE/Kona '98 Adaptive Optics Conference.

"Single core and multi-core single mode optical fibers for optical interferometry," S.Restaino, R.McBroom, J.Baker, SPIE/Kona '98 Adaptive Optics Conference.

"Progress Report on the USAF Research Laboratory Liquid Crystal AO Program." S.Restaino, D.Payne, M.Anderson, J.Baker, S.Serati, G.Loos, SPIE/Kona '98 Adaptive Optics Conference.

"A high Q.E. fast readout wavefront sensor with analog phase reconstruction," Jeffrey T. Baker et.al., SPIE/Kona '98 Adaptive Optics Conference.

"Low Cost Adaptive Optics System," I.Percheron, J.Baker, L.Finkner, S.Kiwanuka, G.Loos, S.Restaino, Astronomical Society of the Pacific Conference Series Volume 174, Catching the Perfect Wave: Adaptive Optics and Interferometry in the 21<sup>st</sup> Century, July98.

"Two telescope interferometric testbed to develop low cost atmospheric correction techniques for high angular resolution," Astronomical Society of the Pacific Conference Series Volume 174, Catching the Perfect Wave: Adaptive Optics and Interferometry in the 21<sup>st</sup> Century, July98.

"Single-mode optical fibre linkages of large telescopes at visible wavelengths: experimental results," S.Restaino, J.Baker, R.Carreras, J.Fender, G.Loos, R.McBroom, D.Nahrstedt, D.Payne, Measurement Scientific Technology 8 (1997) 1105-1111.

"Visible interferometric coupling of two telescopes through single mode optical fibers," S.Restaino, R.McBroom, J.Baker, R.Carreras, G.Loos, Optics Communications 130 (1996) 231-234.

"A Low Cost, High Performance, Self-Scanning Correlating White Light Fringe Tracker System@, J.Baker, L.Finkner, I. Percheron, D. Sanchez, presented at the SPIE Adaptive Optics Conference, Wailea, HI, July '96.

"High Pressure Transverse-discharge Copper Vapor Laser," J. Baker, R. Najaf-zadeh, N. Sung, J.J. Kim, M.J. Kushner. CLEO 1988.

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