

Name: David Leroy Talent, Ph.D.  
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**EDUCATION: Ph. D.** (Space Physics and Astronomy)  
**Rice University**, Houston, TX  
Thesis title: "A Spectrophotometric Study of HII  
Regions in Chemically Young Galaxies"  
Degree Awarded: May, 1981

**M.S.** (Space Physics and Astronomy)  
**Rice University**, Houston, TX  
Thesis title: "Observations of Selected Perseus Arm  
H II Regions"  
Degree Awarded: May, 1979

**B.S.** (major: Physics / minor: Mathematics)  
**Southwest Missouri State University**  
Springfield, Missouri  
Degree Awarded: August 1974  
Honors: **Magna Cum Laude** (upper 1% of class)

**SECURITY CLEARANCE = "SECRET" (DoD Industrial Security Clearance Office, since 04-1987)**

**MANAGEMENT EXPERIENCE: Boeing projects on Maui (see below)**

**COMPUTER LANGUAGES: FORTRAN, BASIC, FORTH, (learning: C, MATLAB)**

**PROFESSIONAL POSITIONS:**

**01/2003 – Present: Oceanit Laboratories, Incorporated – (HQ in Hawaii)**

Rank: Senior Scientist/Astronomer, Maui Office/Mainland Operations/Texas  
Supervisor: Leslie Bailey, HANDS Program Manager  
Oceanit Laboratories, Inc.

Texas Office: 5 Finetta Court  
Alvin, TX 77511 ph.: (281)-393-1239 cell: (832)-265-4080

Company Home Office: Oceanit Center; 828 Fort St. Mall, 6<sup>th</sup> Floor; Honolulu, HI 96813

Activities for Oceanit Laboratories, Inc.:

(A) **Team member:** Deployment of a world wide system of automated space surveillance telescopes in the 0.5m to 1.0m class for the USAF and NASA; major contribution – Site Selection Study for AFRL,

(B) **Lead Scientist:** Evaluation of satellite spectroscopic data for the USAF – material surface characteristics as a diagnostic tool for mission-specific issue analysis,

(C) **U.S. Patent Holder:** Developed and patented a model of the earth orbital debris environment called **PODEM**. (U.S. Patent #6,757,617 – June 29, 2004.)

(D) **Business Development:** Expanding Oceanit's business base to the mainland United States, and

(E) **Classified Projects:** Additional project activities are classified.

**09/2000 – 01/2003: Lockheed-Martin/Consolidated Space Operations Contract**

Rank: Chief Scientist, Science Advisory Office for the Consolidated Space Operations Contract (CSOC)  
Supervisor: Mr. Dan Brandenstein, Vice President and Program Manager for Lockheed-Martin /  
Consolidated Space Operations Contract

Activities for Lockheed-Martin / CSOC:

- (A) **Management Liaison Officer:** Between CSOC and the science user community as well as to U.S. government offices.
- (B) **Facilitator and Coordinator:** CSOC Science Working Group – a body that would meet once or twice a year to develop input to CSOC from the science user community.
- (C) **Science Technical Advisor:** Provided advice to Lockheed management re: the impact of CSOC activities to government projects.

### **03/1997 – 09/2000: Boeing/RTS**

Boeing / Rocketdyne Technical Services  
Kihei, Maui, Hawaii

Rank: Staff Scientist -- MTS-7 (highest technical rank)

Activities for Boeing/RTS on Maui at the USAF Space Surveillance Site:

- (A) **Task and Personnel Manager:** NASA-JPL/NEAT Task Order w/ budget of \$531,000 – joint NASA and Air Force project,
- (B) **Scientist:** Air Force Project -- Satellites In Living Color (SILC) project – spectroscopy of geosynchronous satellites,
- (C) **Systems Engineer:** USAF / AEOS telescope \$185,000,000 project -- Oct. '97 thru Oct.'98
- (D) **Instrument Development:** CCD image sensor applications for orbital debris, near earth asteroids, orbital dynamics, solar-terrestrial interactions, and astronomy.

### **09/1986 - 03/1997: Lockheed-Martin/SEAT**

Rank: Staff Scientist

Lockheed-Martin / SEAT Contract  
Solar System Exploration Department  
NASA – Johnson Space Center  
Houston, Texas

Activities for Lockheed-Martin:

- (A) **Lockheed Support Scientist for NASA's Orbital Debris Program:**
  - Orbital Debris Analysis
  - Orbital Debris Radar Calibration Spheres (ODERACS) (STS-60 and STS-63)
    - team member in charge of calculations for deployment mechanics
    - safety assessment – on-orbit deployment
    - astronaut training materials developer
  - Chief Support Scientist for Phase A and B studies of the Debris Collision Warning Sensor (DCWS) telescope (for space shuttle) at NASA-JSC,
  - STS-28 classified activities support for NASA and USAF
- (B) **Expedition leader/scientist** for SEDS tethered package reentry off the coast of Mexico
- (C) **Inventor/developer** of a new theoretical computer model called the **Particle-In-a-Box (PIB)** for projecting the evolution of the orbital debris environment
- (D) **Deputy Systems Security Officer** for two classified computer systems
- (E) **Instrument Design and Development:** worked with former astronaut, Dr. Karl Henize, on design, FAT, and SAT of a 30-cm portable satellite tracking telescope known as the CDT
  - research conducted on small orbital debris in geosynchronous orbit with the CDT

- Hawaii at Maui Space Surveillance Complex over a two year period @ SECRET level classification. I worked with Dr. Henize on this project until his death while climbing Mt. Everest – at which time I completed the project and prepared the unclassified version of the research as a paper for presentation at the Second European Conference on Space Debris in Darmstadt (March, 1997).

**09/1982 - 09/1986: Abilene Christian University, Department of Physics (Abilene, TX)**

Rank: Assistant Professor of Physics

Activities for Abilene Christian University:

(A) **Assistant Professor of Physics** I taught ...

- astronomy
- statistical mechanics
- electromagnetic field theory
- classical mechanics
- stellar structure and evolution
- optics
- acoustics

(B) **Director of the University Observatory** (16-in. class telescope w/ cameras and photometer)

(C) **Advisor and Student Research Director** – included involving one student on trip to Cerro Tololo Interamerican Observatory (CTIO) in Chile

(D) **Independent Astronomical Research** – Studies of barred spiral galaxies – chemical composition and stellar and galactic evolution – also cosmology. Individual research activities included trips to CTIO in Chile and Kitt Peak National Observatory (KPNO) in Arizona.

**09/1980 - 09/1982: University of Chicago / Yerkes Observatory (Williams Bay, WI)**

Rank: William Gaertner Fellow in Astronomy, Yerkes Observatory, The University of Chicago.

Activities:

(A) **Astronomical Research:** I engaged in independent research on the chemistry of gaseous irregular galaxies and active galactic nuclei. Work was conducted at the Yerkes observatory, CTIO, and KPNO.

**Professional Society Memberships**

The American Astronomical Society

The Astronomical Society of the Pacific

**Membership in Honor Societies and other honors**

Sigma Pi Sigma (Mathematics Honor Society)

Kappa Mu Epsilon (Physics Honor Society)

18<sup>th</sup> ed. Of “American Men and Women of Science”

Eagle Scout – Boy Scouts of America (1969)

**Honors and Citations ...**

(1) Asteroid (33154) Talent (1998 DT15) – named after me by NASA-JPL NEAT Project leaders for my work on NEAT project at MSSS on Maui (while employee of Boeing/RTS).

(2) Brig. General Pete Worden (then Col.) – A letter of commendation to Boeing management for my support of the November, 1999 Leonid Meteor Campaign.

- (3) Boeing – Three Commendations : (a) support of the AEOS telescope project; (b) support of the NEAT project; and (c) support of the ESEX satellite program.
- (4) Lockheed-Martin – Numerous citations for significant project contributions

Other skills / experience / service/ and misc. professional activities ...

- (1) **Civil Air Patrol** – Captain – Maui and in Houston.
- (2) **Consultant** -- 1998 to 2002: Consultant to Oceanit Laboratories, Inc. where I worked on SBIR (Phase I and II) development of an orbital debris environment computer model called PODEM.
- (3) **Photographer** – while in Abilene operated a professional photography and imaging business – D&D Talent Photography.
- (4) **Private Pilot** – 125 hours VFR, single engine; no longer active due to diabetic condition.
- (5) **Television Reporter** – hosted a weekly television spot for KRBC-TV while in Abilene, TX – a “science in our community” report. Later, at Lockheed (1986-1997), worked on several promotional videos, and also worked with a visiting PBS crew for a segment of “The Universe and I” series for which I did the voice-over narration; it was aired throughout the nation on about 150 stations. Thus, I have some experience in media communications and journalism.
- (6) **Planetarium Operator** – While a graduate student at Rice University, I was employed, part-time, as a weekend planetarium operator at the Houston Museum of Natural Science – Burke-Baker Planetarium.
- (7) **Newspaper Columnist** – while in Wisconsin, at Yerkes Observatory, I wrote a weekly educational newspaper column on astronomy.
- (8) **Adjunct Professor** –1987 to 1997 and 2000 thru 2006: Typically teach 1 or 2 classes per year at the University of Houston – Clear Lake.
- (9) **NASA Aerospace Summer Intern (1977)** – During the summer of 1977, while a graduate student at Rice University, I was a summer intern at NASA-JSC in, what was then, the Environmental Effects Office – Dr. Andrew Potter, Branch Chief.

Hobbies:

Swimming, photography, R/C model aircraft (newest addition).

# UNCLASSIFIED PUBLICATIONS and DISCOVERIES

by  
David L. Talent, Ph.D.

## I. Contributions to Astronomical Conferences

“Abundance Determinations from Spectrophotometric Observations of Four Perseus Arm H II Regions”, by D. L. Talent and R. J. Dufour, 152 AAS Meeting, Madison, Wisconsin, 1978 June, B.A.A.S., 10, 406. (Read by Talent)

“A Very N-Rich Emission Nebula in NGC 6822”, by R. J. Dufour and D. L. Talent, 153<sup>rd</sup> AAS Meeting, Mexico City, Mexico, 1979 January, B.A.A.S., 10, 617. (Read by Dufour)

“A Spectrophotometric Study of H II Regions in Chemically Young Galaxies”, by D. L. Talent, 157<sup>th</sup> AAS Meeting, Albuquerque, NM, 1981 January, B.A.A.S., 12, 866. (Poster)

“Chemical Abundance Gradients in M74 – A Preliminary Report”, by D. L. Talent, Joint Meeting of the Texas Sections of the AAPT and the APS w/ Zone 10 of the SPS, Austin, Texas, 1982 November, B.A.P.S., 28-#2, 204. (Poster)

“The Oxygen Abundance Gradient in NGC 7741”, by D. L. Talent and J. P. Roberts, Joint Meeting of the Texas Sections of the AAPT and APS w/ Zone 10 of the SPS, Austin, Texas, 1983 November. (Poster)

“Spectra Tabulation Package”, by J. P. Roberts and D. L. Talent, APS Meeting, San Antonio, Texas, 1984 January. (Read by Roberts)

“Attempt to Observe The Sodium Exosphere of Mercury During the 1993 Solar Transit”, by A. E. Potter, D. L. Talent, H. Kurokawa, S. Kawakami, and T. H. Morgan, Lunar and Planetary Science Conference XXV, March 14-18, 1994, pages 1099-1100.

“Null Results in A Search for Sodium Emission During the 1993 Transit of Mercury”, by A. Potter, D. L. Talent, S. Hurokawa, and S. Kawakami (Lunar and Planetary Science Conference – 1996).

“Asteroid Light Curves”, by J. L. Africano, P. W. Kervin, J.V. Lambert, D. L. Talent, E. F. Tedesco, A. F. Angara, D. Nishimoto, P. Sydney, V. Soo Hoo, D. O’Connell, and A. Alday, 29<sup>th</sup> Annual Meeting of the AAS Division for Planetary Sciences, 28 July--1 August 1997, Cambridge, MA. B.A.A.S., V. 29, #3, 976. (Poster)

“Asteroid Astrometry and Photometry Using USAF Space Surveillance Assets on Maui”, by D. L. Talent, P. Kervin, J. L. Africano, J. V. Lambert, A. Angara, D. L. Nishimoto, P. Sydney, V. Soo Hoo, D. O’Connell. The 191<sup>st</sup> Meeting of the AAS, 6 – 10 January 1998, Washington, D.C. B.A.A.S., V. 29, #5, 1318. (Poster)

## II. Journal Publications – Astronomical

“On the Column Density of the Interstellar Mg II to Sirius and Other Nearby Stars”, by Y. Kondo, D. L. Talent, E. S. Barker, R. J. Dufour, and J. L. Modisette, *Astrophysical Journal*, 220, L97 (1978)

“Picture Processing Analysis of the Optical Structure of NGC 5128 (Centaurus A)”, by R. J. Dufour, S. Van den Bergh, C. A. Harvel, D. H. Martins, F. H. Schiffer, III, R. J. Talbot, D. L. Talent, and D. C. Wells, *Astronomical Journal*, 84, 284 (1979).

“Spectrophotometry of Four H II Regions in the Perseus Arm and a Reassessment of Galactic Abundance Gradients”, by D. L. Talent and R. J. Dufour, *Astrophysical Journal*, 233, 888, (1979).

“Spectrophotometry of a Planetary Nebula in the Irregular Galaxy NGC 6822”, by R. J. Dufour and D. L. Talent, *Astrophysical Journal*, 235, 22 (1980).

“An H II Region in NGC 6744: Spectrophotometry and Chemical Abundances”, by D. L. Talent, *Astrophysical Journal*, 252, 594 (1982).

“A Note on the Spectra of the Nuclear ‘Hot Spots’ of NGC 1097”, by D. L. Talent, *Publications of the Astronomical Society of the Pacific*, v. 94, 36 (1982).

“The Peculiar Galaxy Abell 76”, by D. L. Talent, J. B. Kaler, J. S. Gallagher, and D. A. Hunter, *Astrophysical Journal*, 260, 488 (1982).

“A Note on the Oxygen Gradient in NGC 628”, by D. L. Talent, *Publications of the Astronomical Society of the Pacific*, v. 95, 986 (1983).

“The Chemical Characteristics of Irregular Galaxies”, by D. L. Talent (in preparation for 2006).

“The Chemical Characteristics of Barred Spiral Galaxies”, by D. L. Talent (in preparation for 2006).

### **III. Unclassified Military & Industry Publication / Conferences**

“Hazard Analysis for The Breakup of Satellites 16937 and 16938”, by P. Anz-Meador, D. L. Talent, and R. H. Rast, JSC 22471 (U) / LEMSCO 23613, February 27, 1987.

“Albedo Estimates for Debris”, by A. E. Potter, K. Henize, and D. Talent, (Contribution to the Upper Stage Breakup Conference held at NASA-JSC on May 14-15, 1987): Chapter 7, *Orbital Debris from Upper-Stage Breakup*, (J. Loftus, ed. – 1989).

“Review of Current Activities to Model and Measure the Orbital Debris Environment in Low-Earth Orbit”, by R. D. Reynolds, P. Anz-Meador, R. Rast, and D. L. Talent, Committee on Space Research (COSPAR) / 27<sup>th</sup> Annual Meeting, Espoo, Finland, 1988 July, Cospar Abstracts, W.III.2.1, (Read by Reynolds)

“Observing Orbital Debris Using Space-Based Telescopes: Mission Orbit Considerations”, by R. C. Reynolds, D. L. Talent, and F. Vilas, *Publications of the Astronomical Society of the Pacific*, v. 101, 1055. (1989)

“Optical / IR Observations of Orbital Debris From Orbiting Platforms: Description of a 60-Inch Diameter Space-Borne Telescope”, by D. L. Talent (Lockheed-ESC) and F. Vilas (NASA-JSC); presented at the Third Annual RADC Space Surveillance Conference, 14-16 November, 1989, Griffis AFB, NY.

“Design of a Shuttle-Based Space Debris Telescope”, by E. H. Richardson, D. L. Talent, C. L. Tritsch, and F. Vilas; presented at SPIE Conference 1236, 12-16 February, 1990, Tucson, AZ.

“Analytical Model For Orbital Debris Environmental Management”, by D. L. Talent; invited paper for presentation to NASA/DoD/AIAA workshop on Orbital Debris, 16-19 April, 1990, Baltimore, MD

“Lunar-Outpost Astronomy : A Scenario For Paced, High-Return Growth”, by D. L. Talent, H. J. Smith, and F. Vilas; presented at the Lunar and Planetary Science Conference, XXI, Sprint, 1990, Houston, TX.

“A Plan for the Development of Lunar Astronomy”, by M. V. Sykes, F. Vilas, T. L. Page, H. J. Smith, J. O. Burs, M. Colavita, G. Synder, S. A. Stern, and D. L. Talent; AIP Conference Proceedings 207, M. J. Mumma and H. J. Smith, editors; *Astrophysics from the Moon*; Anapolis, MD, 1990.

“Stalking Geosats With a Camera”, by W. Livingston and D. L. Talent, *Sky and Telescope*, September, 1990, p. 319.

“Simulation of Physical and Orbital Characteristics for the Get Away Special Calibration Experiment”, by C. A. O’Neill (NASA-JSC), D. P. Clark (MDSSC-SSD), and D. L. Talent (Lockheed-ESC), presented at the 16<sup>th</sup> Annual AIAA Technical Conference Symposium, Houston, TX, May 19, 1991. (Note: This paper received the “Best Presentation Award” by at the AIAA—Houston Section – 16<sup>th</sup> Annual Symposium for Session 9, Space Systems II).

“Multi-Use Lunar Telescopes” by Genet, Genet, and D. L. Talent in ASP Conference Proceedings, ed. by Alexi Vladimar Philippenko. TITLE: *Robotic Observatories in the 1990’s*. (1991)

“Analytical Model For Orbital Debris Environmental Management”, by D. L. Talent, *Journal of Spacecraft and Rockets*, July/August 1992 (vol. 29, #4, p. 508-513)

“Small Expendable Deployer System: Radar and Optical Ground Measurements Final Report”, by J. F. Stanley, T. J. Settecerci, and D. L. Talent, July 1, 1993, NASA-JSC, JSC-26258.

“Analysis of Video Images of the Re-entry of the SEDS-1 End Mass” by D. L. Talent, Fourth International Conference on Tethers in Space Proceedings, Smithsonian Institution, Washington, D.C., 10-14 April 1995

“GEO Debris Survey” by D. L. Talent, 12<sup>th</sup> Inter-Agency Space Debris Coordination Meeting”, NASA-JSC, March 8-10, 1995.

“The Debris Collision Warning Sensor Concept Overview”, by D. L. Talent and F. Vilas, presented at the International Space Station Free Flyer Workshop at the University of Maryland at College Park, MD, 14-15 May 1996

“Radar and Optical Measurements Final Report: Orbital Debris Radar Calibration Spheres”, JSC-27241, by G. H. Cress, A. E. Potter, T. J. Settecerci, G. P. Sherrill, E. G. Stansbery, and D. L. Talent, June 01, 1996, NASA-JSC, JSC-27241.

“The Battlelab SILC Program”, by D. L. Talent, 1999 Amos Technical Conference, Renaissance Wailea Beach Resort, Aug. 30 – Sep. 9, 1999, Maui, HI (Read by Talent)

“The AFRL Preliminary Spectrograph: Programs, Products, and Progressions”, by L. Johnson, K. Kissell, D. L. Talent, J. Albetski, G. Spanjers, and J. Blake, 1999 AMOS Technical Conference, Renaissance Wailea Beach Resort, Aug. 30 – Sep. 9, 1999, Maui, HI (Read by Johnson)

“Development of a Phenomenological Orbital Debris Model With Specific Application to Risk Assessment for High Value On-Orbit Systems”, K. Cheung, D. L. Nishimoto, and D. L. Talent, *SBIR Phase II Final Report – Contract # NAS8-00001*, Nov.01, 2001, (delivered to George C. Marshall Space Flight Center).

“Meter-Class Autonomous Telescope for Space Debris Research” by E. Stansbery, D. O’Connell, D. Talent, E. Walker, J. Africano, D. Nishimoto, and P. Kervin, 2003 AMOS Technical Conference, Wailea Marriott, Sept. 8-12, 2003, Maui, HI.

“Daylight Astrometry and Design Studies for the LEO Raven”, by Capt. J. Nelson, P. Sydney, D. O’Connell, D. Talent, E. Walker, C. Sabol, and Maj. M. Goda, 14<sup>th</sup> AAS/AIAA Space Flight Mechanics Meeting, Feb. 8-12, 2004, Maui, HI.

“An Examination of the Reflectance Spectra of More Than 100 Non-Resolved Earth-Orbiting Objects”, by D. Talent, M. Giffin, K. Hamada, and P. Kervin, 2004 AMOS Technical Conference, Wailea Marriott, Sept. 13 – Sept. 17, 2004, Maui, HI (Poster Session)

#### **IV. Co-Discoveries – Asteroids (NEAT @ Maui) and Galactic Novae**

Asteroids:	Designation	Date
(>16 total)	2000 VA45	11/2000
	2000 SZ44	09/2000
	2000 SQ43	09/2000
	2000 SE8	09/2000
	2000 SD8	09/2000
	2000 QW7	08/2000
	2000 PN8	08/2000
	2000 NQ11	07/2000
	2000 JB6	06/2000
	2000 HR24	05/2000
	2000 HD24	05/2000
	2000 GH147	04/2000
	2000 GQ127	04/2000
	2000 ES70	03/2000
	1999 LS7	06/2000
	1997 VM4	11/1997

Galactic Nova:	Designation	Date
	Nova Cygni 1975	09/1975

#### **V. For information on papers published, including citations, see ...**

[http://adsabs.harvard.edu/cgi-bin/nph-abs\\_connect?return\\_req=no\\_params&&author=Talent,%20D&db\\_key=AST](http://adsabs.harvard.edu/cgi-bin/nph-abs_connect?return_req=no_params&&author=Talent,%20D&db_key=AST)

#### **VI. Salary History ...**

- (1) Oceanit Laboratories, Inc. (2003 - present): \$117,000. (current)
- (2) Lockheed-Martin/CSOC (2000-2003): \$115,140. (final)
- (3) Boeing (Maui) (1997 – 2000): \$ 98,676. (final)
- (4) Lockheed-Martin (1986 – 1997): \$ 65,000. (final)
- (5) Abilene Christian University (1982 – 1986): \$ 28,000. (final)
- (6) U. of Chicago / Yerkes Observatory (post-doc): \$ 19,100. (final)