VITA (August 2013)
Dr. Daniel A. Fleisch
Springfield, Ohio, USA

General Information and Qualifications

1. Name: Fleisch, Daniel A.
2. Date of Birth: December 11, 1951
3. Place of Birth: Milwaukee, Wisconsin, USA
4. Education:
   - B.S. Georgetown University, 1974, Physics, *cum laude*
   - M.S. Rice University, 1976, Space Physics and Astronomy
   - Ph.D. Rice University, 1980, Space Physics and Astronomy
5. Teaching Experience (10 years full-time teaching experience):

Rice University	1976-1980	Graduate Assistant
Wittenberg University	1997	Adjunct Instructor
Wittenberg University	1998-1999	Visiting Assistant Professor
Wittenberg University	1999 - 2004	Assistant Professor
Wittenberg University	2004 – 2011	Associate Professor
Wittenberg University	2011 – Present	Professor

6. Professionally Related Experiences Other Than Teaching:

Rice University, January 1977 to October 1980, Research Assistant

a) Performed radar measurements of winds and turbulence in the neutral equatorial stratosphere. Designed and conducted a series of quarterly experiments, each of continuous 48-hour duration, to study radar returns produced by volumetric scatter in lower stratosphere. Performed spectral-moment analysis of experimental data to determine scattered power, vector mean wind velocity, velocity fluctuations, and turbulence structure constant.
b) Constructed, operated, and analyzed the data from a large 50-MHz phased-array radar designed to probe the Earth's atmosphere

System Planning Corporation, October 1980 to December 1984, Program Manager, Senior Program Manager, Senior Scientist:

a) Performed system engineering studies, radar range analysis, test planning, and field checkout of instrumentation radars.
b) Responsible for technical proposals, system and test-site specifications, technical marketing, and acceptance testing for the company's radar systems.
c) Co-developed the company's first digital inverse-synthetic-aperture (ISAR) imaging system, which was adopted by Lockheed, Martin Marietta, Northrop, McDonnell Douglas, and several U.S. Government agencies involved in the development of low-observable platforms.
d) Taught several in-house and customer training courses.
e) Conducted special measurement programs at customers' request.

Metratek, Incorporated, December 1984 to October 1985, Vice President and Member of the Board of Directors

Responsibilities:

a) Directed the research and development efforts of the Electromagnetics Division, which included analytical studies as well as hardware design, fabrication, and testing.
b) Led the design effort for two new series of instrumentation radars.
c) Conducted study efforts in the areas of electromagnetic field analysis, phased-array beamforming calculations, Gregorian subreflector design, and anechoic chamber analysis.

Electronic Decisions, Incorporated (EDI)/Comlinear Corporation, October 1985 to July 1993, Vice President and Engineering Manager

Responsibilities:

a) Directed a staff of scientists, engineers, and technicians engaged in the development and testing of prototype signal-processing components and

subsystems in the areas of digital communications, advanced electronic countermeasures, and radar.

b) Served as Principal Investigator for research and development contracts with the U.S. Air Force and Navy for the application of acoustic charge transport technology to wideband signal processing problems.

c) Designed and presented more than 20 one-day technical seminars on the use of programmable and adaptive transversal filters.

d) Working with technical representatives of CBS Radio, Gannett, and Group W, brought a contract for the development of an in-band digital audio broadcast system to EDI; this contract ultimately led to the acquisition of the company by National Semiconductor.

Aeroflex Lintek Corp., July 1993 to June 2000, Chief Scientist and Executive Vice President

Responsibilities:

a) Performed technical analyses, conducted measurements, wrote proposals, and taught training seminars in the areas of antenna and radar cross-section measurement, signal processing, and high-speed instrumentation for telecommunications satellites.

b) Managed the technical aspects of system development and testing, and advised the president on corporate strategy and new business development.

c) Provided training and measurement services to U.S. Government and aerospace industry organizations including the U.S. Air Force and Navy, the Defense Research Agency of Great Britain (formerly the Royal Signals and Radar Establishment), Lockheed Martin, Northrop Grumman, Pratt & Whitney, and Hughes Space Systems.

Professional Activities

7. Academic Awards and Honors:

- Selected as one of the Top 25 Science, Technology, Engineering, and Mathematics (STEM) Professors in Ohio in August, 2013
- Selected as Ohio Professor of the Year for 2010 by the Carnegie Foundation for the Advancement of Teaching and the Council for the Advancement and Support of Education
- Honored by the Senate of the State of Ohio for Exemplary Attainment in 2010
- Selected as Honorary Member of Class of 2013
- Selected as Honorary Member of Class of 2012
- Selected as Honorary Member of Class of 2010
- Selected as Honorary Member of Class of 2009
- Presented Invited Lecture on "200 Years of Electromagnetics" for Wright State University Physics Department's 40-year anniversary, 2007
- Selected as Honorary Member of Graduating Class of 2006
- Received SOCHE Award for Faculty Excellence and Innovation, 2005
- Received Wittenberg Distinguished Teaching Award, 2004
- Received SOCHE Award for Faculty Excellence and Innovation, 2003
- Received Omicron Delta Kappa Award for Excellence in Teaching, 2002
- Selected as Outstanding Faculty Member, Greek Scholarship Awards, 2000
- Selected as Honorary Member of Graduating Class of 2000
- Honored by Westerville, Ohio School System for contributions to National Engineering Week "Future Cities" competition (1999)
- Selected as Technical Committee member of Antenna Measurements and Techniques Association (AMTA) (1995)

8. Professional Organizations:

American Physical Society (APS), Life Member
Institute of Electrical and Electronic Engineers (IEEE)
American Association of Physics Teachers (AAPT)

9. Publications:

Fleisch, D.A., and J. Kregenow, *A Student's Guide to the Mathematics of Astronomy*, Cambridge University Press, 2013.

Fleisch, D.A., *A Student's Guide to Vectors and Tensors*, Cambridge University Press, 2011.

Fleisch, D.A., *A Student's Guide to Maxwell's Equations*, Cambridge University Press, 2008.
Fleisch, D.A., "Dynamic Scot Electrified World," *The Scotsman*, December 2005.
Peters, E., M. Snedden, K. Kingsley, E. Young, R.J. Jost, S. Brumley, and D. Fleisch, "Active Stability Control of Pulsed-IF Radars," *AMTA Symposium Proceedings,* October 2003.
Moghaddar, A., S. Gilmore, and D. Fleisch, "Motion Compensation in ISAR Imaging using a Phase-monitoring Subsystem," *AMTA Symposium Proceedings,* October 2000.
Kraus, J. and D. Fleisch, *Electromagnetics with Applications,* McGraw-Hill, New York, 1998.
Fleisch, D.A. and A. Moghaddar, "Dynamic Ground-to-air Radar Imagery," *AMTA Symposium Proceedings*, October 1996.
Fleisch, D.A.; P. Swetnam; H. Chizever; and B. Kent, "A Combined Pulsed-IF and Gated-CW Instrumentation Radar," *AMTA Symposium Proceedings*, October 1994.
Vigil, A.J.; A. Hull; L. Solie; M. Miller; R. Kansy; and D. Fleisch, "Applications of Acoustic Charge Transport," *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, Vol. 40, No. 5, September 1993.
Fleisch, D.A. and G. Pieters, "The ACT Programmable Transversal Filter," *Microwave Journal*, May 1991.
Kansy, R.J.; M. Hoskins; D. Fleisch; and B. Hunsinger, "Acoustic Charge Transport Signal Processors," *Microwave Journal*, November 1988.
Fukao, S.; K. Aoki; K. Wukasugi; T. Gsuda; S. Kato; and D. Fleisch, "Some Further Results on the Lower Stratosphere Winds and Waves over Jicamarca," *Journal of Atmospheric and Terrestrial Physics*, 1981.
Fleisch, D.A., "Jicamarca Radar Measurements of Winds and Turbulence in the Stratosphere," Ph.D. Dissertation, Rice University, Houston, TX, 1980.
Fleisch, D.A., "Stratospheric Scatter of Radio Waves and the Jicamarca Radio Telescope," M.S. Thesis, Rice University, Houston, TX, 1977.

10. Reports, Papers, and Workshops Presented:

Fleisch, D.A., "Introduction to Instrumentation Radar Systems," Workshop presented at Aeroflex-Lintek Corporation, Powell, OH, January 2006.
Fleisch, D.A., "Scientific Data Mining," Workshop for High-school science teachers presented at Wittenberg University, June 2005.
Fleisch, D.A., "Radar Cross Section Measurement and Analysis," Workshop presented at Aeroflex-Lintek Corporation, Powell, OH, June 2005.
Fleisch, D.A., "New Resources for Undergraduate Astronomy Education," Workshop presented at American Association of Physics Teachers/Southern Ohio Section Conference, Springfield, OH, March 2002.
Fleisch, D.A., "Community Outreach through Introductory Astronomy Projects," American Astronomical Society/American Association of Physics Teachers Joint Conference, San Diego, CA, January 2001.
Fleisch, D.A., "The Use of Polyphase Pulse Coding in RCS Measurements," Microwaves Conference, London, England, October 1994.
Fleisch, D.A., and P. Swetnam, "High-speed Instrumentation Radars," HYPER Conference, Paris, France, January 1994.
Fleisch, D.A., "The Impact of Programmability on RF and Microwave Signal Processors," Electro Conference, May 1992.
Fleisch, D.A., "ACT Devices and Their Applications to Signal Processing," 1989 Long Island IEEE Symposium, May 1989.
Fleisch, D.A. and W. Gordon, "Radar Observations of the Stratosphere over Jicamarca," URSI November, 1978 Meeting, Boulder, CO.
Fleisch, D.A. and W. Gordon, "Radar Measurements of Stratospheric Dynamics," URSI June, 1977 Meeting, Menlo Park, CA.

Papers by Students:

Dunkin, James, "Digital Simulation of Thunder from Three-Dimensional Lightning," American Physical Society/SOS Meeting, Flint, MI, April 2010.
Fritchman, Joseph, "Transit of Extrasolar Planets and Analysis Methods," American Physical Society/SOS/AAPT Joint Conference, Oxford, OH, October 2007.

Niu, Yuru and Daniel Fleisch, “Evaluating the Karhunen-Loeve Transform for SETI,” American Physics Society/SOS/AAPT Joint Conference, Oxford, OH, October 2007.

Morris, Jonathon, and Daniel Fleisch, “Scattering of Electromagnetic Waves by Fog,” American Physical Society/Ohio Section Conference, Youngstown, OH, April 2002.

Armstrong, Brian, Jonathon Morris, and Daniel Fleisch, “A Twin-helix Radio Interferometer,” American Association of Physics Teachers/Southern Ohio Section Conference, Springfield, OH, March 2002.

Blanch, Celeste, Matthew Burke, Kelly Busch, Nathan Eddings, Lindsay Pabst, Jennifer Stephenson, and Daniel Fleisch, "Astronomical Alignment of Megalithic Stones at Avebury, England," *Butler University Undergraduate Research Conference*, April 2000.

Miller, Casey, “The Impact of Radiation on Radar Cross Section,” *AMTA Symposium Proceedings*, October 1999.

11. Grant Applications:

2007 Model 5000 Radar for Student Research (Aeroflex Corp. – awarded)
2007 Summer Honors Institute (State of Ohio – awarded)
2005 Instrumentation for Electromagnetics Laboratory (Aeroflex Lintek Corp.)
2003 Student Research in Electromagnetics (Aeroflex Lintek Corp. – awarded)
2002 Student Research in Electromagnetics (Aeroflex Lintek Corp. - awarded)
2000 Summer Honors Institute (State of Ohio - awarded)
1999 Summer Honors Institute (State of Ohio - awarded)

12. Professionally Oriented Research

a) Provides technical consulting to aerospace industry and U.S. Gov’t (1998 – present)
b) Supervised student research project in astronomical data processing (2005 - 2013)
c) Supervised student summer internship in random noise radar (2003, 2007)
d) Supervised student summer internship in radar detection of orbital debris (2002)
e) Supervised Senior thesis project in electromagnetic scattering (2002)
f) Supervised student summer internship on radio-telescope receiver (2001)
g) Supervised two student summer internships in radar scattering (2000)
h) Supervised Senior Honors thesis project in electromagnetic scattering (1999)
i) Supervised student summer internship in digital imaging (1999)

13. Date and Purpose of Last Sabbatical Leave:

Fall 2012: Completed new book (*A Student’s Guide to the Mathematics of Astronomy,* Cambridge University Press, 2013) and completed proposal to Cambridge University Press for *A Student’s Guide to Waves* (contract signed in spring of 2013).

14. Professional Meetings Attended:

a) Regularly attends Antenna Measurement Techniques Association meeting
b) Regularly attends meetings of the Ohio Section of the American Physical Society
c) See item (10) for additional conferences attended

15. Teaching:

a) Physics 107N (Introductory Astronomy) - 16 semesters
b) Physics 100 (Introductory Physics) - 2 semesters
c) Physics 205 (Classical/Modern Physics with Lab) - 1 semester
d) Junior-Senior Physics Seminar - 5 semesters
e) Common Learning/WittSem - 2 semesters
f) Physics 321 (Signal Processing) – 4 half-semesters
g) Physics 213 (Thermodynamics & Optics) - 2 half-semesters
h) Physics 215 (Special Relativity and Applications) - 2 half-semesters
i) Physics 214 (Intermediate Physics Laboratory) - 2 semesters
j) Physics 218 Electricity and Magnetism with Lab) - 5 semesters
k) Physics 325 (Astrophysics) - 3 half-semesters
l) Physics 200 (Mechanics and Waves) – 4 semesters
m) Physics 280 (Observational Astronomy) – 1 semester
n) Physics 313 (Electronics) – 1 half-semester
o) Physics 312 (Wave Phenomena) – 3 semesters
p) Physics 320 (Computational Physics) – 1 half-semester
q) Physics 332 (Electromagnetism) – 2 semesters

16. Innovations or Experiments in Teaching Methods:
    a) Produces technical podcasts for students to use as review tool
    b) Utilizes the concept of "Quality Circles" to obtain student feedback regularly during semester
    c) Developed and offered new intermediate-level astronomy course emphasizing hands-on learning using astronomical instrumentation and data from the Sloan Digital Sky Survey
17. Contributions to Interdepartmental/Honors Courses:
    a) Presented lecture on astronomical concepts to three WittSem classes (2010)
    b) Developed and co-taught interdepartmental WittSem on "Life in the Universe" (2008)
    c) Developed and taught interdepartmental field course on "The Roots of 21st-Century Science" with Biology Prof. T. Lewis (2007)
    d) Developed and taught interdepartmental short course on "Scientific Data Mining" (2005)
    e) Co-presented Winter Community University course on Science and Religion (2001)
    f) Presented lecture on limits of astronomical knowledge to philosophy class (2001)
    g) Developed and presented course material on Einstein to Common Learning faculty prior to 1998 and 1999 academic years
    h) Presented lecture on the concept of time in physics and astronomy to Honors class (1998)
    i) Presented lecture on time and time-keeping to sociology class (1999)
    j) Presented lectures on Einstein and relativity to four other sections of Common Learning (1999)
18. Academic Contacts Outside the Classroom:
    a) Conducts observing sessions at Weaver Observatory (over 500 sessions Fa01 through Sp13)
    b) Conducts review/problem sessions (over 200 sessions Fa01 through Sp13)
    c) Supervised 8 independent studies (2002 to present)
    d) Supervised 9 Senior Research Theses (1999 to present)
    e) Arranged undergraduate summer internships at Aeroflex Lintek (1998-2000, 2003, 2007, 2010)
    f) Led student groups to Southern Ohio Section/AAPT meetings (2003, 2004, 2005, 2007)
    g) Led student group to 1998 Ohio APS meeting
    h) Led student group to 1999 Case Western Reserve Engineering Open House
    i) Served as academic advisor to students beginning in Fall 1999
19. Workshops and Meetings Attended Related to Development as a Teacher:
    a) Attended Workshop on Computational Science Tools and Techniques, 2006
    b) Attended Workshop on Teaching Astronomy at AAPT Meeting, 2002
    c) Attended RealTime Physics Workshop at AAS/AAPT Meeting, 2001
    d) Attended Teaching Workshop for Adjunct and Visiting Faculty, 1998
20. Campus and Community Contributions:
    a) Wrote and performed narration for special presentation of *The Planets* by the Springfield Symphony Orchestra (2012)
    b) Led student group to Adler Planetarium in Chicago (2009, 2010, 2011)
    c) Presented lecture to Champaign County Land Trust (2009)
    d) Presented after-school workshop at Springfield Public Library (2009)
    e) Presented lectures to Friends of the Library (2009)
    f) Presented lecture on "The Physics of Flight" for NASA *Art of Engineering* exhibit at Springfield Art Museum (2006)
    g) Appeared in ThinkTV documentary "The Dayton Codebreakers" (2005)
    h) Presented Phi Beta Kappa Lecture and Honors Luncheon Lecture (2005)
    i) Presented Mortarboard "Last Lecture" (2003)
    j) Presented "Q&Q" lecture (2002)
    k) Regularly presents lectures to professional groups (Rotary, Kiwanis, University Club) (2001 – present)
    l) Conducted "College for Kids" summer course (2003 – 2007)
    m) Presented lecture to "Bring your child to work day" students (2002)
    n) Served on Faculty Executive Board (2003 – 2006)
    o) Serves on IBM Lecture Series Committee (1999 – 2005)
    p) Served on Faculty Endowment Fund Board (2001 – 2004)
    q) Served on Pre-Health Committee (2003 – 2007)
    r) Serves on Honor Council (2007 – 2010)
    s) Provided science commentary to public radio station WYSO (12 segments, 2001 - 2003)

t) Led student group visits to U.S. Air Force Museum (1998 – 2001, 2006)
u) Advisor to Wittenberg Astronomical Society (1998 – present)
v) Led two student group visits to Cleveland Museum of Natural History (2005, 2006)
w) Led five student group visits to Boonschaft Planetarium (2003 - 2007)
x) Led student group visits to Western Reserve Observatory in Cleveland (2001, 2006)
y) Led student group visit to Hayden Planetarium in New York City (2000)
z) Led two student group visits to Adler Planetarium in Chicago (1999, 2005)
aa) Led student group visits to astronomical sites in England and Scotland in 1998, 1999, 2004, and 2009

21. Other Contributions to the University:
a) Presented over 50 presentations to groups of prospective students (2011 to present)
b) Presented welcome lecture at New Student Days Opening Ceremony (2008, 2009, 2010)
c) Design, implemented, and maintains live Sun/Earth display system in Science Atrium (2008)
d) Participated in Summer Honors Institutes (1999, 2000, 2007)
e) Supervised refurbishment of Lundin 10" telescope in Weaver Observatory (2002 – 2003)
f) Raised external funding for digital imaging system and spectrograph for Weaver Observatory (1998 – 1999)
g) Employed two students to begin renovation of Weaver Observatory during summer of 1999
h) Employed student to construct twin-helix radio telescope during summers of 2000 & 2001

22. Contributions to the Community:
a) Conducted and sponsored open houses at Weaver Observatory attended by more than 5000 members of Springfield community (Fa98 – present)
b) Sponsored a student-designed "Planet Walk" (educational exhibit) for Springfield Parks System
c) Regularly presents lectures on astronomy to grade-school and high-school science classes
d) Serves as Director of Judging for Ohio Region National Engineers Week Future City Competition (1999 – Present)
e) Initiated "Girl Scout Science Night" with student Mike Crotty in 2001, participates annually