

Scott Hudson

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Education

- 1991 PhD Electrical Engineering California Institute of Technology. *Thesis*: Radar imaging of moving objects with applications to aircraft target recognition and planetary radar astronomy. *Adviser*: Demetri Psaltis.
- 1986 MS Electrical Engineering, California Institute of Technology
- 1985 BS (Honors) Applied Science, California Institute of Technology
- 1983 AA Pasadena City College

Professional Experience

- 2002 – present: Professor, School of EECS, WSU Tri-Cities
- 2006 – 2011: Director of Engineering, WSU Tri-Cities
- 2001 – 2002: Professor, School of EECS, WSU
- 1999 – 2001: Associate Director, School of EECS, WSU
- 1996 – 2001: Associate Professor, School of EECS, WSU
- 1994 – 2002: Visiting Scientist, Jet Propulsion Laboratory
- 1990 – 1996: Assistant Professor, School of EECS, WSU
- 1988 – 1990: Consultant, Litton Data Systems
- 1985 – 1986: Technical Staff, Radar Sciences Group, Jet Propulsion Laboratory

Professional Recognition

- 2005 – Recognized as a "Distinguished User" of the NAIC Arecibo Observatory.
- 2000 May 5 – Computer model of asteroid Kleopatra featured on cover of SCIENCE.
- 1998 – Outstanding Researcher award, College of Engineering and Architecture, Washington State University.
- 1998 – Outstanding Teaching Faculty award, School of Electrical Engineering and Computer Science, Washington State University.
- 1995 – Asteroid 5723 named “Hudson” by International Astronomical Union (Minor Planet Circular 25654, 9 September 1995).
- 1994 – NASA Group Achievement Award (as member of the Toutatis Radar Experiment Team, 18 March 1994).
- 1994 – NASA Summer Faculty Fellow, Jet Propulsion Laboratory.
- 1985-1989 – NSF Graduate Fellowship.
- Seven papers appearing in *Science*; two papers appearing in *Nature*.

Courses Developed/Modified

- Developed new version of EE 528 covering radar systems
- Developed new course EE 432 RF Engineering for Telecommunications, including laboratories and complete online version of course
- Developed new course EE 514 Optoelectronics Lab I
- Modified EE 431 RF and Microwave Circuits and Systems, including updating of content and lab modules
- Modified EE 504 Modern Optics, including development of “stand alone” course text in pdf format
- Modified EE 221, including open-source pdf text and Youtube video lectures.
- Modified EE 518, including open-source pdf text and Youtube video lectures.
- Developed new lab modules for EE 262 Electrical Circuits Laboratory
- Developed new lab modules for EE 352 Electrical Engineering Laboratory I
- Developed new lab modules for EE 362 Power Systems Laboratory
- Developed content for new Freshman Engineering sequence: Engr 120 and CptS 121

Courses Taught

- EE 214 Design of Logic Circuits
- EE 221 Numerical Computing for Engineers
- EE 261 Electrical Circuits I
- EE 262 Electrical Circuits Laboratory
- EE 304 Introduction to Electrical Circuits
- EE 311 Electronics
- EE 321 Electrical Circuits II
- EE 331 Electromagnetic Fields and Waves
- EE 352 Electrical Engineering Laboratory I
- EE 361 Electrical Power Systems
- EE 362 Power Systems Laboratory
- EE 415 Design Project Management
- EE 416 Electrical Engineering Design
- EE 431 RF and Microwave Circuits and Systems
- EE 432 RF Engineering for Telecommunications
- EE 464 Digital Signal Processing I
- EE 489 Introduction to Control Theory
- EE 491 Performance of Power Systems
- EE 493 Protection of Power Systems I
- EE 501 Linear System Theory
- EE 504 Modern Optics
- EE 507 Random Processes in Engineering
- EE 514 Optoelectronics Lab I
- EE 518 Advanced Electromagnetic Theory I
- EE 519 Advanced Electromagnetic Theory II
- EE 528 Advanced Topics in Electromagnetics
- EE 535 Numerical Solutions to EM Problems
- EE 574 Optoelectronics
- CptS 121 Program Design and Development C/C++

- CptS 251 C Programming Language
- Math 171 Calculus I
- Math 172 Calculus II
- Math 173 Calculus III
- Math 220 Linear Algebra
- Math 315 Differential Equations
- Math 440/540 Applied Mathematics I
- Math 441/541 Applied Mathematics II

Funding

- NSF S-STEM. “Community Focused Scholarships in Electrical and Mechanical Engineering and Computer Science.” \$246,777. 8/07-8/11. PI
- NSF CRCD. “Optoelectronics M.S. Specialization at Washington State University.” \$500,000. 9/98-8/01. Co-PI with W. Tourruellas (original PI), S. Broschat, M. Kuzyk, M. Trevisan. I served as PI for the last two years.
- “Radio Communication Consortium.” Agilent, Advanced Radio Telecom, Western Wireless, Boeing, AirTouch, Solectron, AT&T contributed approximately \$110,000 in cash and \$140,000 in equipment to support development of high-quality program in wireless telecommunications. R.S. Hudson, R. Olsen, B. Belzer, Co-PIs.
- NASA Planetary Geology and Geophysics Program. “Reconstruction of Three-Dimensional Shape and Spin State of Asteroids from Radar Data.” \$170,085. 4/01-4/04. PI
- NASA Planetary Geology and Geophysics Program. “Reconstruction of Three-Dimensional Shape and Spin State of Asteroids from Radar Data.” \$133,026. 4/98-4/01. PI
- NASA Planetary Geology and Geophysics Program. “Reconstruction of Three-Dimensional Shape and Spin State of Asteroids from Radar Data.” \$120,396. 4/95-4/98. PI
- NASA Innovative Research Program. “Detailed Three-Dimensional Reconstruction of Asteroids from Radar Observations.” \$107,162. 2/92-2/94. PI

Journal Publications (Number in brackets is Google Scholar citations [C=n] as of Mar. 2017)

1. **Hudson RS**, Skrumeda LL, Whaling W. Fe II Level Populations in a Hollow Cathode Discharge. JOURNAL OF QUANTITATIVE SPECTROSCOPY AND RADIATIVE TRANSFER 38:1-4. 1987. [C=20]
2. **Hudson RS**, Ostro SJ. Doppler Radar Imaging Of Spherical Planetary Surfaces. JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH AND PLANETS 95: 10947-10958: 1990. [C=13]
3. Ostro SJ, Campbell DB, Chandler JF, Hine AA, **Hudson RS**, Rosema KD, Shapiro II. Asteroid-1986DA - Radar Evidence For A Metallic Composition. SCIENCE 252: 1399-1404. 1991. [C=81]
4. Harmon JK, Slade MA, **Hudson RS**. Mars Radar Scattering - Arecibo Goldstone Results At 12.6-cm And 3.5-cm Wavelengths. ICARUS 98: 240-253. 1992. [C=28]
5. Ostro SJ, Campbell DB, Simpson RA, **Hudson RS**, Chandler JF, Rosema KD, Shapiro II, Standish EM, Winkler R, Yeomans DK, Velez R, Goldstein RM. Europa, Ganymede, And Callisto - New Radar Results From Arecibo And Goldstone. JOURNAL OF GEOPHYSICAL RESEARCH-PLANETS 97: 18227-18244. 1992. [C=103]
6. Schneider JB, **Hudson RS**. A Finite-difference Time-domain Method Applied To Anisotropic Material. IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION 41: 994-999. 1993. [C=103]
7. **Hudson RS**, Psaltis D. Correlation Filters For Aircraft Identification From Radar Range Profiles. IEEE TRANSACTIONS ON AEROSPACE AND ELECTRONIC SYSTEMS 29: 741-748. 1993. [C=212]
8. **Hudson RS**. Three-Dimensional Reconstruction of Asteroids From Radar Observations. REMOTE SENSING REVIEWS. 8:195-203. 1994. [C=84]
9. **Hudson RS**, Ostro SJ. Shape of asteroid 4769 Castalia (1989 PB) From Inversion of Radar Images. SCIENCE 263: 940-943. 1994. [C=139]
10. Harmon JK, Ostro SJ, Chandler JF, **Hudson RS**. Radar ranging to Ganymede and Callisto. ASTRONOMICAL JOURNAL 107: 1175-1181. 1994. [C=11]

11. Ostro SJ, Rosema KD, **Hudson RS**, Jurgens RF, Giorgini JD, Winkler R, Yeomans DK, Choate D, Rose R, Slade MA, Howard SD, Mitchell DL. Extreme elongation of asteroid 1620-Geographos from radar images. *NATURE* 375: 474-477. 1995. [C=35]
12. **Hudson RS**, Ostro SJ. Shape and Nonprincipal Axis Spin-State of Asteroid-4179 Toutatis. *SCIENCE* 270: 84-86. 1995. [C=165]
13. Ostro SJ, **Hudson RS**, Jurgens RF, Rosema KD, Campbell DB, Yeomans DK, Chandler JF, Giorgini JD, Winkler R, Rose R, Howard SD, Slade MA, Perillat P, Shapiro II. Radar Images of Asteroid 4179 Toutatis. *SCIENCE* 270: 80-83. 1995. [C=85]
14. Andrews AK, Hudson RS, Psaltis D. Optical-radar imaging of scale models for studies in asteroid astronomy. *OPTICS LETTERS* 20: 2327-2329. 1995. [C=10]
15. Mitchell DL, Ostro SJ, Rosema KD, **Hudson RS**, Campbell DB, Chandler JF, Shapiro II. Radar Observations of Asteroids 7-Iris, 9-Metis, 12-Victoria, 216-Kleopatra, and 654-Zelinda. *ICARUS* 118: 105-131. 1995. [C=52]
16. Scheeres DJ, Ostro SJ, **Hudson RS**, Werner RA. Orbits close to asteroid 4769 Castalia. *ICARUS* 121: 67-87. 1996. [C=204]
17. Ostro SJ, Jurgens RF, Rosema KD, **Hudson RS**, Giorgini JD, Winkler R, Yeomans DK, Choate D, Rose R, Slade MA, Howard SD, Scheeres DJ, Mitchell DL. Radar observations of Asteroid 1620 Geographos. *ICARUS* 121: 46-66. 1996. [C=60]
18. Mitchell DL, Ostro SJ, **Hudson RS**, Rosema KD, Campbell DB, Velez R, Chandler JF, Shapiro II, Giorgini JD, Yeomans DK. Radar observations of asteroids 1 Ceres, 2 Pallas, and 4 Vesta. *ICARUS* 124: 113-133. 1996. [C=54]
19. **Hudson RS**, Ostro SJ, Harris AW. Constraints on spin state and Hapke parameters of asteroid 4769 Castalia using lightcurves and a radar-derived shape model. *ICARUS* 130: 165-176. 1997. [C=21]
20. Mitchell DL, **Hudson RS**, Ostro SJ, Rosema KD. Shape of asteroid 433 Eros from inversion of Goldstone radar Doppler spectra. *ICARUS* 131: 4-14. 1998. [C=30]

21. Scheeres DJ, Ostro SJ, **Hudson RS**, DeJong EM, Suzuki S. Dynamics of orbits close to asteroid 4179 Toutatis. ICARUS 132: 53-79. 1998. [C=156]
22. Asphaug E, Ostro SJ, **Hudson RS**, Scheeres DJ, Benz W. Disruption of kilometre-sized asteroids by energetic collisions. NATURE 393: 437-440. 1998. [C=176]
23. **Hudson RS**, Ostro SJ. Photometric properties of Asteroid 4179 Toutatis from lightcurves and a radar-derived physical model. ICARUS 135: 451-457. 1998. [C=32]
24. Ostro SJ, **Hudson RS**, Rosema KD, Giorgini JD, Jurgens RF, Yeomans DK, Chodas PW, Winkler R, Rose R, Choate D, Cormier RA, Kelley D, Littlefair R, Benner LAM, Thomas ML, Slade MA. Asteroid 4179 Toutatis: 1996 radar observations. ICARUS 137: 122-139. 1999. [C=73]
25. Ostro SJ, Pravec P, Benner LAM, **Hudson RS**, Sarounova L, Hicks MD, Rabinowitz DL, Scotti JV, Tholen DJ, Wolf M, Jurgens RF, Thomas ML, Giorgini JD, Chodas PW, Yeomans DK, Rose R, Frye R, Rosema KD, Winkler R, Slade MA. Radar and optical observations of asteroid 1998 KY26. SCIENCE 285: 557-559. 1999. [C=58]
26. Benner LAM, **Hudson RS**, Ostro SJ, Rosema KD, Giorgini JD, Yeomans DK, Jurgens RF, Mitchell DL, Winkler R, Rose R, Slade MA, Thomas ML, Pravec P. Radar observations of asteroid 2063 Bacchus. ICARUS 139: 309-327. 1999. [C=43]
27. Hudson RS, Ostro SJ. Physical model of asteroid 1620 Geographos from radar and optical data. ICARUS 140: 369-378. 1999. [C=59]
28. Ostro SJ, **Hudson RS**, Nolan MC, Margot JL, Scheeres DJ, Campbell DB, Magri C, Giorgini JD, Yeomans DK. Radar observations of asteroid 216 Kleopatra. SCIENCE 288: 836-839. 2000. [C=112]
29. Scheeres DJ, Ostro SJ, Werner RA, Asphaug E, **Hudson RS**. Effects of gravitational interactions on asteroid spin states. ICARUS 147: 106-118. 2000. [C=72]

30. **Hudson RS**, Ostro SJ, Jurgens RF, Rosema KD, Giorgini JD, Winkler R, Rose R, Choate D, Cormier RA, Franck CR, Frye R, Howard D, Kelley D, Littlefair R, Slade MA, Benner LAM, Thomas ML, Mitchell DL, Chodas PW, Yeomans DK, Scheeres DJ, Palmer P, Zaitsev A, Koyama Y, Nakamura A, Harris AW, Meshkov MN. Radar observations and physical model of asteroid 6489 Golevka. ICARUS 148: 37-51. 2000. [C=65]
31. Ostro SJ, **Hudson RS**, Benner LAM, Nolan MC, Giorgini JD, Scheeres DJ, Jurgens RF, Rose R. Radar observations of asteroid 1998 ML14. METEORITICS & PLANETARY SCIENCE 36: 1225-1236. 2001. [C=22]
32. Giorgini JD, Ostro SJ, Benner LAM, Chodas PW, Chesley SR, **Hudson RS**, Nolan MC, Klemola AR, Standish EM, Jurgens RF, Rose R, Chamberlain AB, Yeomans DK, Margot JL. Asteroid 1950 DA's encounter with Earth in 2880: Physical limits of collision probability prediction. SCIENCE 296: 132-136. 2002. [C=93]
33. Benner LAM, Ostro SJ, Nolan MC, Margot JL, Giorgini JD, **Hudson RS**, Jurgens RF, Slade MA, Howell ES, Campbell DB, Yeomans DK. Radar observations of asteroid 1999 JM8. METEORITICS & PLANETARY SCIENCE 37: 779-792. 2002. [C=18]
34. Benner LAM, Ostro SJ, **Hudson RS**, Rosema KD, Jurgens RF, Yeomans DK, Campbell DB, Chandler JF, Shapiro I. Radar observations of asteroid 3908 Nyx. ICARUS 158: 379-388. 2002. [C=15]
35. **Hudson RS**, Ostro SJ, Scheeres DJ. High-resolution model of Asteroid 4179 Toutatis. ICARUS 161:346-355. 2003. [C=23]
36. Patru D, **Hudson RS**. Optically injected logic circuits for remote-powered systems on a chip. COMPUTERS & ELECTRICAL ENGINEERING. 36: 1075-1092. 2010.
37. Nolan MC, Magri C, Howell ES, Benner LAM, Giorgini JD, Hergenrother, CW, **Hudson RS**, Lauretta DS, Margot JL, Ostro SJ, Scheeres DJ. Shape model and surface properties of the OSIRIS-REx target Asteroid (101955) Bennu from radar and lightcurve observations. ICARUS 226: 629-640. 2013. [C=61]

Book Chapters

- Campbell DB, **Hudson RS**, Margot JL. Advances in Planetary Radar Astronomy. In REVIEW OF RADIO SCIENCE 1999-2002. IEEE Press. 2002.
- Ostro SJ, **Hudson RS**, Benner LAM, Giorgini JD, Magri C. Asteroid Radar Astronomy. In ASTEROIDS III. University of Arizona Press. 2002.