

## Curriculum Vitae – Stephen E. Schneider

Birthdate: April 22, 1957  
Citizenship: U.S.  
Office phone: 413–545–2076  
Home phone: 413–665–6665  
Fax: 413–545–4223

Department of Astronomy  
University of Massachusetts/Amherst  
619E Lederle Graduate Research Tower  
Amherst, MA 01003  
e-mail: schneider@astro.umass.edu

### Education

8/82–8/85 Cornell, Ph.D. in Astronomy; Thesis: Galaxy Groups: Neutral Hydrogen and Dynamics  
9/79–8/82 Cornell, M.S. in Astronomy  
9/75–6/79 Harvard, B.A., Magna Cum Laude in Astronomy and Astrophysics

### Employment

9/99– Professor, University of Massachusetts (Department Head 9/09 – 8/18)  
*Chief Undergraduate Advisor (2000–09); Honors Coordinator (2007–09); Smith Astronomy Faculty Search (2001–2); FCAD Senator; College Curriculum Committee (2000–04, chair 2001–04); College Scholarship Committee (2000–02); VLA Skeptical Review Panel (2000–04); Personnel Committee (2001–04, 05–09, chair 2002–04, 05–07); College Personnel Committee (2007–09); Merit Committee (chair 2005–07); Faculty Senate (2001–02); Astronomy Help Desk Supervisor (2001–); Department Coordinator for Physical Science Talent Advancement Program (1999–03); Arecibo L-band Feed Array (ALFA) Steering committee (2002–04); ALFA System Advisory and Planning Committee (2003–04); Green Bank Telescope referee (2006–09)*

9/92–8/99 Associate Professor, University of Massachusetts  
*Graduate advising committee; TA supervisor; Curriculum Committee; Personnel Committee; FCRAO proposal evaluation committee; Department Future committee; Arecibo Scientific Advisory Committee (1992–4); Arecibo proposal referee (1996–); chair of faculty search (1997); chair of undergraduate astronomy program (1998–); NRC Fellowship Review Panel (1997–06 associate chair 2005–06); Director of FCAD summer internship program for undergraduates (1999–); Department Coordinator for Physical Science Talent Advancement Program (1999–); FCAD Senator (1998–)*

9/87–8/92 Assistant Professor, University of Massachusetts  
*Colloquium Chair (1987–89); Undergraduate Advising (1988–9); chair of graduate advising committee (1989–); graduate admissions (1990); FCRAO proposal review committee*

9/85–8/87 Research Associate, University of Virginia.  
*Completed large HI survey of dwarf galaxies to study their dynamics and clustering properties.*

### Awards, Scholarships, Societies

2012–13 Provost's Team-Based Learning Fellowship  
2007–08 PRS Classroom Technology Fellowship  
2002–03 Davis Course Redesign Fellowship  
2001 Hewlett Teaching Fellowship  
2000 College Outstanding Teacher Award  
1997–98 President, UMass Chapter of Sigma Xi  
1991 Presidential Young Investigator Award  
1987 Trumpler Award of the Astronomical Society of the Pacific (*outstanding thesis in N.A.*)  
1985– Member, Sigma Xi  
1983– Member, American Astronomical Society  
1979–83 National Science Foundation Fellowship  
1979–80 Cornell Sage Fellowship  
1975–76 National Merit Scholarship  
1975–76 Adler Planetarium Scholarship  
1975 U. S. President's Science Scholarship to Australia

### **Synergistic Activities:**

- 8/11–8/17 **Supporting STEM Teaching and Learning through Communities** (NSF Noyce, K. Davis, P.I. , \$3M) *Co-PI for 6-year program to help develop stronger STEM programs in high-needs schools in our region. [20 master teachers and 20 new teachers.]*
- 8/10–8/11 **Noyce TF/MTF Planning Grant** (NSF Noyce, K. Davis, P.I. , \$74k) *Co-PI for this planning grant to work with regional schools to design fellowship program for science and math teachers. [met with school and governmental officials in Springfield, Holyoke, Greenfield, and Orange]*
- 9/10–9/13 **STEM Digital** (NSF ITEST, M. Sternheim, P.I. , \$970k) *Co-PI for the development of a teacher development program using digital image analysis to explore environmental science issues. [~ 20 teachers each year.]*
- 7/03–7/08 **Science Education Online** (NASA, K. Davis, P.I., \$1.2M) *Co-PI for the development of a new online program for middle school science master's program. Also produced two science-content courses and assisted other science faculty in the development of eight other online courses. [approximately 30 teachers participating each year.]*
- 6/02–6/05 **STEM Connections** (NASA, J. Tyson, P.I.) *Faculty mentor for graduate fellows who worked with middle school science teachers throughout the school year, bringing inquiry-based research ideas into the classroom. [5 fellows and 6 teachers over the three years.]*
- 8/98–8/01 **Mission to Planet Earth** (NASA, M. Sternheim, P.I.) *Faculty mentor for summer workshop with school-year follow-up for pre- and in-service teachers to learn about earth systems and education resources on the web. Led teachers in investigations of the greenhouse effect, acid rain, and developing related classroom activities. [~ 15 pre- and 15 in-service teachers each summer.]*
- 6/96 **Orange Science Workshop** (Orange School System) *Weeklong program for Orange elementary school teachers. In my portion, we explored observational astronomy activities for children. [12 in-service teachers]*
- 7/95 **Doing Research in the Classroom** (NSF/PALMS, M. Sternheim, P.I.) *Experimental program to present basic ideas of research to teachers in a week-long summer session using several 5C5E to assist the new teachers. Led group studying atmospheric issues, that provided the basis for research projects with students.*
- 7/94 **Project UPDATE** (NSF, R. Cook, P.I.) *Summer program with school-year meetings to update high-school physics teachers in areas of modern physics and have them interact with experts in the field. Instructed teachers about energy from local to cosmic contexts.*
- 6/92–7/94 **Five Colleges program on Education in the Earth's Environment, Ecology and Energy** (5C5E) (NSF, M. Sternheim, P.I.) *Program to model a research experience for middle-school teachers, relating research they could do locally to global issues. My groups related local ozone measurements to low-level and stratospheric ozone problems. Teachers developed a classroom research project during the two week workshop, we worked with them during the school year and following summer to assist in its implementation.*

### **Students Mentored:**

Undergraduates research projects: Carrie Meyers (1989); Kimberly DuPrie (1993–94); Zeke Kaufmann (1999–00); Autumn Homewood (2002–03); Kristen Cote (2003–04); Ross Dubois (2005–08); David Sliski (2007–08); Sam Bell (2008); Jennifer Posson-Brown;; Benjamin Farley

Masters-level projects: John Spitzak (1988–1990); Christopher Brunt (1992–94); Jessica Rosenberg (1994–96); Nicolas Bouche (1997–9); Andria Schwartz (2002–03); Guilin Liu (2006–08); Sirinrat Sithajan (2007–08); Zhon Butcher (2009–11)

Doctoral Dissertation projects: Patricia Knezek (1989–93) ; Elizabeth Praton (1990–93,co-chair) ; John Spitzak (1990–95); David Buckley (1990–94); Jessica Rosenberg (1996–); Zhon Butcher (2011–17)

### **Courses Taught:**

Astro 100 – Exploration of the Universe – broad survey of astronomy for non-majors (100-300 students)

Astro 101 – The Solar System – survey of astronomy with a focus on the planets (100-300 students)

Astro 103 – Astronomical Observations – taught and trained graduate TAs to teach 1-credit astronomy lab (~50 students per semester); beginning Fall 2010 we converted this to a 4<sup>th</sup> credit for all students taking Astro 100 and 101 and I redesigned the course for TBL with ~400 students each term

Astro 114 – Stars and Galaxies – introductory course for science majors (30 to 70 students)

Astro 170H – Cosmos: From the Origin of the Universe to the Evolution of Life and Intelligence –honors astrobiology course taught with J. Walker from Biology (~23 students)

Astro 191 – First-year Seminar – 1-credit seminar for new majors (20-30)

Astro 222 – Galactic and Extragalactic Astronomy – astrophysics course for majors (~25)

Astro 225 – Extragalactic Astronomy/“Dark Matter” Seminar – inquiry style course for majors to interpret simulated data and make discoveries about how to apply physical principles to interpret them (~15)

Astro 226 – Cosmology – introduction for science majors (~20)

Astro 335 – Modern Astrophysics – revamped intermediate-level astrophysics course for majors (~15)

Astro 590A/690A/Educ 712o – Astronomy for Teachers – Course for pre- and in-service teachers with exploration of hands-on activities applicable for middle- or high-school students (15-25)

Astro 640 – Galactic Astronomy – graduate introduction to stellar populations and Milky Way (~10)

Astro 748 – Cosmology – graduate introduction to theoretical and observational cosmology (12)

Astro 791/2 – Journal Club – seminar on current papers for graduate students (~15-20)

Biology 190A – Cosmos: From the Origin of the Universe to the Evolution of Life and Intelligence – experimental course taught with J. Walker from Biology and many guest lecturers (100-200)

Educ 512 –Teaching Science in Middle and High School – applied coursework to accompany a summer program for science teachers (~30)

GeoSci 590P – Planet Earth – course developed with R. Yuretich aimed at middle- and high-school science teachers exploring earth-systems and global environmental issues (~30; online ~15)

Physics 141 – Introductory Physics I – basic mechanics discussion sections (60)

### Course Redesign Projects

9/12–9/13 **Team-Based Learning Astronomy Lab** (Provost’s TBL Fellowship.) *Redesigned astronomy lab sections to make use of the new TBL classrooms, engaging ~400 students in weekly projects to examine various aspects of astronomy that complement the introductory lecture classes.*

6/02–6/03 **Large-Lecture Course Redesign Project** (Davis Foundation, N. Aitken, P.I.) *Project to introduce technological improvements to large introductory lecture courses in several disciplines and study the results.*

5/02–5/03 **Talking Toward Techno-Pedagogy** (Bryn Mawr Workshop) *Participant in year-long program to work with IT and library specialists to take advantage of new technologies to improve science courses.*

1/02–1/04 **Development and Evaluation of a Multimedia Instructional Package for Astronomy** (NSF, G. Greenstein, P.I.) *Development and pilot study of interactive modules to aid learning in introductory astronomy classes.*

### Sponsored Research in Astronomy

9/11–9/12 **Unravelling the Mysteries of the Leo Ring: An Absorption Line Study of an Unusual Gas Cloud** (NASA/Hubble Space Telescope) *Awarded 17 orbits on the HST.*

1/01–1/04 **Nançay/2MASS Studies of the Atomic Hydrogen and Infrared Properties of Galaxies** (NSF) *Small travel grant for French-American collaboration.*

1/95–4/03 **2-Micron All Sky Survey (2MASS) Science Team** (Science Team Member of this NASA+NSF; M. Skrutskie, P.I.) *Major national project to map the entire sky at infrared wavelengths. Worked with counterparts at JPL/IPAC to develop and test the galaxy “pipeline” of 2MASS, which detected galaxies’ starlight in the least biased and most uniform way over the entire sky. Frequent meetings at UMass and IPAC with full team and extragalactic team.*

7/97–9/00 **The 3-D Density Distribution of the Nearby Universe with the 2-Micron All Sky Survey** (NASA/JPL) *Compared 2MASS and 21cm HI observations of galaxies to estimate their distances, probe the local structure of the universe, and understand the star/gas relationship in galaxies.*

9/91–1/97 **Studies of Low Surface Brightness Galaxies** (NSF Presidential Young Investigator Award) *Pursued several large-scale projects using the 21 cm emission line of HI to study fundamental questions about the global properties of galaxies.*

9/90–9/91 **A Search for Dark Matter** (UMass Faculty Research Grant) *Pilot project for large-scale 21 cm surveys of galaxies.*

6/88–8/90 **The Relation Between FIR and HI Emission in Galaxies** (NASA) *Studied connections between the dust and atomic gas in galaxies.*

### Recent and Selected Significant Publications:

- J. Healy, S. Blyth, E. Elson, W. van Driel, Z. Butcher, S. Schneider, M.D. Lehnert, and R. Minchin (2018) "HISS, a new tool for HI stacking: application to NIBLES Spectra" MNRAS (submitted)
- Z. Butcher, S. Schneider, W. van Driel, M. D. Lehnert (2018) "The bivariate luminosity-HI mass distribution function of galaxies based on the NIBLES survey" Astronomy & Astrophysics, accepted.
- Z. Butcher, S. Schneider, W. van Driel, M. D. Lehnert, R. Minchin (2016) "NIBLES - an HI census of stellar mass selected SDSS galaxies. II. Arecibo follow-up HI observations" Astronomy & Astrophysics, vol. 596, 60–80
- W. van Driel, Z. Butcher, S. Schneider, M. D. Lehnert, R. Minchin, S-L. Blyth, L. Chemin, N. Hallet, T. Joseph, P. Kotze, R. C. Kraan-Korteweg, A. O. H. Olofsson, M. Ramatsoku (2016) "NIBLES - an HI census of stellar mass selected SDSS galaxies: I. The Nançay HI survey," Astronomy & Astrophysics vol. 595, 118–160
- H. Lee and S. E. Schneider (2015) "Using Astronomical Photographs to Investigate Misconceptions about Galaxies and Spectra: Question Development for Clicker Use" Physical Review Special Topics - Physics Education Research, vol 11, number 2, 11
- J. L. Rosenberg, K. Haislmaier, M. L. Giroux, B. A. Keeney, and S. E. Schneider (2014) "Unraveling the Mysteries of the Leo Ring: An Absorption Line Study of an Unusual Gas Cloud," Astrophys. J., 790, 64–72.
- J. P. Huchra, L. M. Macri, K. L. Masters, T. H. Jarrett, P. Berlind, M. Calkins, A. C. Crook, R. Cutri, P. Erdogdu, E. Falco, T. George, C. M. Hutcheson, O. L. Lahav, J. Mader, D. Mink, N. Martimbeau, S. Schneider, M. Skrutskie, S. Tokarz, M. Westover. (2012) "The 2MASS Redshift Survey – Description and Data Release." Astrophys. J. Suppl., 199, 26–47
- J. I. Davies, R. Auld, L. Burns, R. Minchin, E. Momjian, S. Schneider, M. Smith, R. Taylor, W. van Driel (2011) "The Arecibo Galaxy Environments survey – IV: the NGC7448 region and the HI mass function." Monthly Notices of the Royal Astronomical Society, 415, 2011, pp. 1883–1894. W. van Driel, S. E. Schneider, R. C. Kraan-Korteweg, D. Monnier-Ragaine. (2009) "HI line observations of 2MASS galaxies in the zone of avoidance." Astron. and Astrophys., 505, 29–44
- M. J. Meyer, M. A. Zwaan, R. L. Webster, S. Schneider, L. Staveley-Smith. (2008) "Tully-Fisher Relations from an HI-Selected Sample." Monthly Notices of the R.A.S., 391, 1712–1728.
- C. Bot, G. Helou, W. B. Latter, J. Puget, S. Schneider, Y. Terzian. "A Search for Dust Emission in the Leo Intergalactic Cloud." Astronomical Journal. 138, 2009, pp. 452–458.
- M. F. Skrutskie, R. M. Cutri, R. Stiening, M. D. Weinberg, S. E. Schneider, J. M. Carpenter, C. Beichman, R. Capps, T. Chester, J. Elias, and 21 coauthors (2006) "The Two Micron All Sky Survey (2MASS)," Astron. J., 131, 1163–1183.
- J. L. Rosenberg, S. E. Schneider, J. Posson-Brown (2005) "Gas and Stars in an HI-Selected Galaxy Sample," Astron. J., 129, 1311–1330.
- J. L. Rosenberg, S. E. Schneider (2003) "The Contribution of HI-rich Galaxies to the Damped Ly-alpha Absorber Population at  $z = 0$ ," Astrophys. J., 585, 256–267.
- T. H. Jarrett, T. Chester, R. Cutri, S. E. Schneider, J. P.; Huchra (2003) "The 2MASS Large Galaxy Atlas," Astron. J., 125, 525–554.
- J. L. Rosenberg and S. E. Schneider (2002) "The Arecibo Dual-Beam Survey: The HI Mass Function of Galaxies," Astrophys. J., 567, 247–257.
- S. E. Schneider, J. G. Spitzak, and J. L. Rosenberg (1998) "A Deep Survey of HI-Selected Galaxies: The HI Mass Function," Astrophys. J. Letters, 507, L9–12.
- S. E. Schneider (1989) "Neutral Hydrogen in the M96 Group: the Galaxies and the Intergalactic Ring," Astrophys. J., 343, 94–106.

### Publications outside of astronomical research:

- S. E. Schneider and T. T. Arny (2006–2018), *Pathways to Astronomy*, 1<sup>st</sup>–5<sup>th</sup> editions McGraw Hill, New York (~700pp)
- T. T. Arny and S. E. Schneider (2008–2019), *Explorations: An Introduction to Astronomy*, 5<sup>th</sup>–9<sup>th</sup> editions, McGraw Hill, New York (~550pp)
- H. Lee and S. E. Schneider (2015) "Using Astronomical Photographs to Investigate Misconceptions about Galaxies and Spectra: Question Development for Clicker Use" Physical Review Special Topics - Physics Education Research, vol 11, number 2, 11
- S. E. Schneider and K. S. Davis (2007) "The Dimensions of the Solar System," Science Scope, Summer 2007, 16–19.

S. E. Schneider and Y. Terzian (1984) "Between the Galaxies," *American Scientist* 72, 574–81.

**Community Service**

5/01– ***Sunderland Planning Board*** *Elected 2001, re-elected for 5-year terms 2002,2007,2012,2017*  
10/99– ***Sunderland Historical Commission*** *Chair of Commission 7/00–7/03*  
5/01– ***Sunderland Zoning Board*** *Appointed member*