

Matthew Clay Fleenor

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CURRENT POSITION: Associate Professor

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EDUCATION

University of North Carolina, Chapel Hill

AUG 2001 - AUG 2006

Doctorate (PhD) Physics & Astronomy

University of Massachusetts, Boston

SEP 1999 - AUG 2001

Master of Science (MS) Applied Physics

University of Tennessee, Knoxville

SEP 1995 - MAY 1998

Master of Science (MS) Secondary Science Education

AUG 1989 - MAY 1994

Bachelor of Science (BS) Materials Science & Engineering

TEACHING EXPERIENCE

UNDERGRADUATE

Associate Professor (2012–), *Roanoke College (VA)*

Assistant Professor (2006–2012), *Roanoke College (VA)*

Astronomy Lab Coordinator (2004), *University of North Carolina, Chapel Hill (UNC)*

Planetarium Instructor (2002–2004), *UNC*

Physics & Astronomy Teaching Assistant (2001–2002), *UNC*

Physics Teaching Assistant (1999–2001), *University of Massachusetts, Boston*

SECONDARY

Calculus, Geometry Instructor (1999), *New England Hebrew Academy (MA)*

Physics, Chemistry I & II Instructor (1996–1999), *Christian Academy of Knoxville (TN)*

AWARDS & HONORS

2012, Excellence in Teaching Award, Roanoke College, Nominee

2011, Fulbright Scholar Award, Candidate in Astrophysics

2008, National Gallery Day, Writing Contest Winner– Faculty Division, Roanoke College

2006, Dissertation Presentation Award, American Astronomical Society

2004, Chancellor's List, University of North Carolina

2001, Outstanding Student Award– Applied Physics, Univ. of Massachusetts-Boston

1998, Who's Who Among High School Teachers in America

VOCATIONAL ASPIRATION

I aspire to further both a professional and public understanding of galaxy maturity as a function of the local environment. Under this umbrella are included activities that promote scientific literacy in basic astronomy and physics (K–16) as well as the historical and biographical impact on current science education.

From this statement, three arenas emerge from which I express my vocation: professional research in astrophysics, science education promotion, and scientific literacy for the public.

– Accepted Refereed Publications (non self-referencing citations):

Fleenor, M. C. & Johnston–Hollitt, M. (2010), “Megaparsec–Scale Triggers for Star Formation: Clusters and Filaments of Galaxies in the Horologium–Reticulum Supercluster”, in Smith, B. et al., ed., *Proceedings of Galaxy Wars: Stellar Populations and Star Formation in Interacting Galaxies*. Astro. Soc. Pacific, San Francisco, 81–86. (2)

Johnston–Hollitt, M., Sato, M., Gill, J. A., Fleenor, M. C., & Brick, A.–M. (2008), “Radio Observations of the Horologium–Reticulum Supercluster– I. A3158: Excess star-forming galaxies in a merging cluster?”, *Monthly Notices of the Royal Astronomical Society*, 390, 289–303. (7)

Miller, J., Quammen, C., & Fleenor, M. C. (2006), “Interactive Visualization of Intercluster Galaxy Structures in the Horologium–Reticulum Supercluster”, *IEEE Transactions on Visualization and Computer Graphics Journal*, 12, 1149–1155. (0)

Fleenor, M. C., Rose, J. A., Christiansen, W. A., Johnston–Hollitt, M., Hunstead, R. W., Drinkwater, M. J., & Saunders, W. (2006), “Redshifts and Velocity Dispersions of Galaxy Clusters in the Horologium–Reticulum Supercluster”, *Astronomical Journal (AJ)*, 131, 1280–1287. (6)

Fleenor, M. C., Rose, J. A., Christiansen, W. A., Hunstead, R. W., Johnston–Hollitt, M., Drinkwater, M. J., & Saunders, W. (2005) “Large–Scale Velocity Structures in the Horologium–Reticulum Supercluster”, *AJ*, 130, 545–563. (14)

Fleenor, M. C., Rose, J. A., Christiansen, W. A., Hunstead, R. W., Johnston–Hollitt, M., & Drinkwater, M. J. (2004), “Large–Scale Velocity Flow in the Horologium–Reticulum Supercluster”, *Proceedings of the IAU Colloquium 195* held at the University of Torino, Torino, IT, 12–16 March 2004, Edited by A. Diaferio. (1)

Johnston–Hollitt, M., Fleenor, M.C., Rose, J.A., Christiansen, W.A., & Hunstead, R.W. (2004), “Radio Imaging of Head–tailed Galaxies from an Infalling Filament of the Horologium–Reticulum Supercluster,” *Proceedings of the IAU Colloquium 195* held at the University of Torino, Torino, IT, 12–16 March 2004, Edited by A. Diaferio.

– Doctoral Thesis:

University of North Carolina, AUG 2006

Morphology and Large–Scale Structure within the Horologium–Reticulum Supercluster of Galaxies
Committee: James A. Rose (Chair), Wayne A. Christiansen, Gerald Cecil, Dan Reichart

– Conference Presentations:

“Advantages at Multi–Wavelengths: A Pre–Processed Galaxy Group within a Cluster” (2011), Contributed Oral, *Structure in Clusters and Groups of Galaxies in the Chandra Era*, 12–14 JUL, Boston, MA

“Megaparsec–Scale Triggers for Star Formation: Clusters and Filaments of Galaxies in the Horologium–Reticulum Supercluster” (2009), Contributed Oral (~ 30% acceptance), *Galaxy Wars: Stellar Populations and Star Formation in Interacting Galaxies*, 20–23 JUL, Johnson City, TN

“Radio Properties of the Merging Cluster Complex A3128/A3125” (2007), Contributed Poster with Johnston–Hollitt, M., Rose, J. A., Christiansen, W. A., Hunstead, R. W., *Frontiers of Astrophysics: A Celebration of NRAO’s 50th Anniversary*, 18–21 JUN, Charlottesville, VA

“Characteristics of Megaparsec-scale Structures in the Horologium-Reticulum Supercluster of Galaxies” (2007), Contributed Oral, *American Astronomical Society National Meeting*, 5–10 JAN, Seattle, WA

– Accepted Funding Proposals:

2011 “Operating on Multiwavelengths: Observational and Pedagogical Astrophysics”, Fulbright Scholar Program– New Zealand, under review.

2011,2007–09, “Galaxy Maturation as a Function of Environment Within Galaxy Superclusters”, Roanoke College Faculty Summer Research Award Proposal, \$14.5K.

2010, “Constrained Simulations of Galaxy Superclusters”, Roanoke College Faculty Summer Study Grant Proposal, \$4K.

2005, Grants-in-Aid of Research Recipient, Sigma-Xi \$3K

2004, Dissertation Enhancement Fellowship, National Science Foundation–International, \$10K.

– Declined Funding Proposals:

2009, “RUI: Constrained Simulations, Galaxy Evolution, and the Supercluster Environment”, PI with Anil Shende (co-I), National Science Foundation– AST Division, \$306K.

2008, 2007, “Galaxy Morphology Within Intercluster Filaments of the Horologium-Reticulum Supercluster Environment”, PI, Research Corporation– Cottrell College Science Awards, \$41k, \$51K.

2007, “Photometric and Spectroscopic Monitoring of FU Orionis Stars”, PI, Oak Ridge Associated Universities, \$10K.

SCIENCE EDUCATION PROMOTION

– Accepted Refereed Publications:

Poli, D., Fleenor, M.C., & Rearick, M. (2011), “Drawing on Popular Culture: Using Tattooing to Introduce Biological Concepts”, *American Biology Teacher*, accepted, AUG 2012.

Fleenor, M.C., Poli, D., & Rearick, M. (2010), “Having your cake and eating too: student engagement and collaborative faculty development”, *Proceedings of the Lilly Conference on College and University Teaching* held at Univ. of North Carolina Greensboro, 5–7 Feb. 2010, Ed. R. Purdom.

– Accepted Publications:

Fleenor, M.C. (2009), “Modeling Stupidity”, *The Teaching Professor*, 23, 2.

– Declined Refereed Publications:

Fleenor, M.C., Poli, D., & Rearick, M. (2011), “Physics Ink: Using Tattoos to Highlight Electromechanical Resonance”, *The Physics Teacher*, ~ 25% acceptance rate.

Fleenor, M.C. (2010) “Robert A. Millikan and a Communal Presence in the Sciences: Guiding Principles for the Education of Young Scientists”, *American Journal of Physics*, < 20% acceptance rate.

– Conferences & Workshops in Science Education:

“Earth Patterns, Cycles, and Change” (2011), Invited Instructor for Earth & Space Science Standards of Learning, Grades 3–5, Hollins Elementary Science Institute for Teachers, 16–28 JUN, Hollins University (VA).

“Integrative Learning through Collaborative Teaching Grants” (2010), Invited Oral with S. Kirby and D. Sarabia, Teagle Conference for Integrative Learning, 1 – 2 OCT, Moravian College (PA).

“Engaging the Unengaged: Bio-contextualized Physics Lab” (2010), Invited Oral with D.B. Poli and M. Rearick, Institutionalizing Integrative Learning: Faculty Development, Course Development & Assessment, 16–20 JUN, Roanoke College (VA).

“Having Your Cake and Eating Too: Student Engagement and Collaborative Faculty Development” (2010), Contributed Oral with M. Rearick and D.B. Poli, Lilly National Conference on College and University Teaching, 4–6 FEB, Greensboro (NC).

“Collaborative Teaching Grants: Faculty Development for Integrative Teaching and Learning” (2009), Contributed Oral with D. Sarabia and A. Bloss, American Assoc. of Colleges & Universities, 22–25 OCT, Atlanta (GA).

“Two Birds, One Stone: Integrating Biology Within the Physics Laboratory” (2009), Contributed Poster with D.B. Poli and M. Rearick, Annual Elon Teaching and Learning Conference, 15 AUG, Elon University (NC).

“Beginning a Research Program at a Predominantly Undergraduate Institution” (2008), Attendee, Council for Undergraduate Research, NSF, 22-24 OCT, Calvin College (MI).

“The Trial of Galileo and The Copley Medal for Charles Darwin” (2008), Attendee, Annual Reacting to the Past Conference, 6–8 JUN, Barnard College (NY).

“Blueprint for Learning” (2008), Attendee, Annual Lilly Conference for College and University Teaching, 6–8 FEB, Univ. North Carolina-Greensboro (NC).

“Designing Integrated and Engaging Courses” (2007), Attendee, Barbara Tewksbury Course Development Workshop, 22-24 SEP, Roanoke College (VA).

“Using Computer Applets and Animations to Teach General Relativity” (2007), Attendee, American Astro. Society Opening Workshops, 5 JAN, University of Washington (WA).

– Accepted Funding for Science Education:

2008, “Astrophysical Problem-solving & Historical Perusal”, Roanoke College Curriculum Development Grant Proposal, \$1k.

2007, “Physics 103/104 Laboratory: A Biophysical Contextualization”, PI with M. Rearick (co-I) and D.B. Poli (co-I), Roanoke College Collaborative Teaching Grant Proposal, \$10k.

– Declined Funding for Science Education:

2009, “Science Enrichment for the Roanoke Valley (SERV) Partnership in Astronomy”, PI with R. Grant (co-I), Virginia Dept. of Education, \$191k.

2008, “Plants, Physics, and Fun: Interdisciplinary Modules for Botanical Education”, co-I with D.B. Poli (PI) and M. Rearick (co-I), American Society of Plant Biologists Educational Foundation Grant Proposal, \$28k.

SCIENTIFIC LITERACY FOR THE PUBLIC

–Invited Lectures in Astronomy

2011, “Grand Unification: Aspiring to a Congruent Life with Integrity”, Faith & Reason Series, faculty-wide attendance; less technical

2011–2008, MCSP Conversations Series, College-wide and public attendance; non-technical

2011, “Counting Planets: How Astronomers Discover Extrasolar Planets”

2009, “Why is it the International Year of Astronomy? – Kepler and Galileo”

2008, Are Black Holes our Friends?

2011, 2009, Roanoke College Elderscholar, ~ 60 older adults; less-technical

2011, “Counting Planets: What Makes Extrasolar Planets Count”

2009, “How Astronomers Move from Observation to Interpretation”

2010, “Large-scale Astronomical Environments and Their Influences on Star Formation”, Virginia Association of Astronomical Societies Annual Meeting; more technical

2009, “Collective Memories of the 20th Century: Robert A. Millikan and the enigma of scientific discovery”, President’s Forum Speaker, faculty-wide attendance ; interdisciplinary, more-technical

2009, 2007, Roanoke Valley Astronomical Society, ~ 100 local organization comprised of students, master observers, amateur and professional astronomers, and enthusiasts; more technical

2009, “Cosmic Rays: Historical and Physical Origins”

2007, “Great Debate of 1920: Discussion on Distance Scales”

–Positions for Science Promotion

2010–2007, Astronomy Elderhostel, Workshop Organizer– Galaxies as Building Blocks, Mountain Lake (VA); 3 hour interactive discussion on the nature of the universe.

2010, 2007, Southwest Virginia K-12 Science Fair, Electricity & Magnetism Section Judge, Middle and Secondary Divisions

2010–2006, Astronomy at Roanoke College, Faculty Sponsor; campus-wide student club for astronomy outreach (selected events)

2010, Blue Ridge Parkway, Deep-sky Observing (2×)

2009, IYA One-day Observing- Phases of Venus, Sunspots, Lunar Craters

2007, Comet Holmes Observing

2008, “Curious Astronomy”, Author of a guide that explains from a lay perspective many of the astronomy questions associated with the book *The Curious Incident of the Dog in the Night-time* by Mark Haddon. The book was required summer reading for Roanoke freshman and was discussed at Orientation.

2008, “Darwin Day” science panel, participated in a discussion regarding Darwin and the concept of evolution, especially as it relates to astrobiology and galaxy evolution. This was open to the campus community and the public.

2009–2007, Roanoke Valley Astronomical Society, Scholastic Outreach Chair, Events Co-Organizer (selected events)

2009, Blue Ridge Parkway, Full Lunar Eclipse

2008, Non-English Speaking Outreach, Venus and Space Station
2007, Sidewalk Observing Downtown Roanoke; Moon, Saturn, and Jupiter

2006–2004, North Carolina Teachers and Scientists Collaborating (TASC) Fellow