Dr. Kenneth W. Cavagnolo
Curriculum Vitae

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University of Waterloo
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Education

Michigan State University — 2005 - 2008
Ph.D., Astronomy & Astrophysics

Michigan State University — 2002 - 2005
M.S., Astronomy & Astrophysics, *magna cum laude*

Georgia Institute of Technology — 1998 - 2002
B.S., Physics, *magna cum laude*

Research Experience

Postdoctoral Fellow — 2008 - Present
Supervisor: Brian McNamara, *Univ. of Waterloo*

Graduate Research Assistant — 2003 - 2008
Supervisor: Megan Donahue, *Mich. St. Univ.*

Graduate Research Assistant — 2002 - 2003
Supervisor: Jack Baldwin, *Mich. St. Univ.*

Undergraduate Research Assistant — 2000 - 2002
Supervisor: James Sowell, *Geor. Inst. of Tech.*

Research Program & Interests

My research program is focused on better understanding the connection between AGN and their host environments, with a specific interest in the role of AGN feedback on the formation and evolution of galaxies, galaxy groups, and galaxy clusters.

Areas of interest:
- Mechanical and radiative AGN feedback
- Cosmic magnetic fields
- Conditions for quasar-mode vs. radio-mode dominance
- Black hole accretion mechanisms
- Thermalization of AGN feedback energy
- Formation of ICM thermal instabilities
- Galaxy cluster radio halos
- Cosmological studies via structure formation

Honors

- Referee for ApJ, ApJL, AJ, and CanTAC — 2008 - Present
- Sherwood K. Haynes Award for Outstanding Graduate Student — 2008

- MSU College of Natural Science Dissertation Fellow 2007 - 2008
- ΣΞ National Scientific Research Society Member 2009 - Present
- ΣΠΣ National Physics Honor Society Member 2001 - Present
- American Astronomical Society Member 2002 - Present
- American Physical Society Member 2002 - Present
- Perimeter Institute Black Hole Reading Group Member 2009 - Present
- Dean's List, Georgia Inst. of Tech. 1998-2002

Scientific Skills

- Extensive experience with X-ray and radio data analysis
- Familiarity with infrared, optical, and UV data analysis
- Understanding of AIPS, CASA, CIAO, IRAF, OSA, and SAS analysis software
- Fluent in HTML, IDL, LaTeX, and PERL programming languages
- Working knowledge of C, FORTRAN, MySQL, PYTHON, SUPERMONGO, and TCL
- Mastery of DOS, Linux, Macintosh, and Windows computing architectures
- Expert of computer maintenance, system construction, and troubleshooting

Observing Experience

Giant Metrewave Radio Telescope (GMRT) Jan. 2010
60 hours observing 15 galaxy clusters

Chandra X-ray Observatory (CXO) Jan. 2009
21 hour queued observation of IRAS 09104+4109

Very Large Array Radio Telescope (VLA) Dec. 2008
39 hours observing 13 giant ellipticals

Accepted Proposals & Grants

GMRT Cycle 17, Co-I 2009
The Power and Particle Content of Extragalactic Radio Sources
PI: Somak Raychaudhury, *Univ. Birmingham*

GMRT Cycle 17, Co-I 2009
The Morphology of Steepest Spectrum Radio Sources in Galaxy Cluster Cores
PI: Alastair Edge, *Durham Univ.*

NOAO Cycle 2008A & 2009A/B, Co-I 2008-2009
Normalization and scatter of the $M - T$ relation for supermassive galaxy clusters
PI: Rachel Mandelbaum, *Princeton Univ.*

GMRT Cycle 16, Co-I 2008
The Content of Giant Cavities in the IGM of Galaxy Clusters
PI: Somak Raychaudhury, *Univ. Birmingham*

CXO Cycle 10, PI 2008
IRAS 09104+4109: An Extreme Brightest Cluster Galaxy

CXO Cycle 10, Co-I 2008
Conduction and Multiphase Structure in the ICM
PI: Mark Voit, *Mich. St. Univ.*

Spitzer Cycle 5, Co-I 2008
Star Formation and AGN Feedback in BCGs
PI: Megan Donahue, *Mich. St. Univ.*

Spitzer Cycle 5, Co-I 2008
Infrared Properties of a Control Sample of Brightest Cluster Galaxies
PI: Megan Donahue, *Mich. St. Univ.*

NSF Grant, Co-I 2008
Star Formation in the Universe's Largest Galaxies
PI: Mark Voit, *Mich. St. Univ.*

CXO Cycle 9, Co-I 2007
Quantifying Cluster Temperature Substructure
PI: Mark Voit, *Mich. St. Univ.*

VLA A-configuration Cycle, Co-I 2007
Radio Feedback in Clusters and Galaxies
PI: Brian McNamara, *Univ. Waterloo*

Students Advised

Clif Kirkpatrick, Ph.D. candidate, *Univ. Waterloo* 2008-present
The 2-Dimensional metal abundance distributions in galaxy clusters

Mina Rohanizadegan, M.Sc. candidate, *Univ. Waterloo* 2008-present
Constraining the spin of SMBHs using measured AGN jet powers

Brad Whuiska, Undergraduate research, *Univ. Waterloo* 2009-present
Finding the largest galactic cores in the HST archive

Rob Myers, Undergraduate research, *Univ. Waterloo* 2009-present
In search of radio galaxies via X-ray and radio catalog cross-correlation

Teaching Experience

Substitute Instructor Fall 2006
Course: "Visions of the Universe"

Honors Physics Tutor Summer 2003
Course: "Introductory Honors Physics I & II"

Graduate Teaching Assistant 2002 - 2003
Course: "Visions of the Universe"

References

Megan Donahue, donahue@pa.msu.edu +00-1-517-884-5618
Tenured professor, Michigan State University

Brian McNamara, mcnamara@uwaterloo.ca +00-1-519-888-4567 ext. 38170
Tenured professor, University of Waterloo

G. Mark Voit, voit@pa.msu.edu +00-1-517-884-5619
Tenured professor, Michigan State University

Chris Carilli, ccarilli@nrao.edu +00-1-575-835-7306
National Radio Astronomy Observatory Chief Scientist

Jack Baldwin, baldwin@pa.msu.edu +00-1-517-884-5611
Associate Chair for Astronomy, Michigan State University

Paul Nulsen, pnulsen@cfa.harvard.edu +00-1-617-495-7043
Research Scientist, Center for Astrophysics at Harvard University

Mike Wise, wise@science.uva.nl +31-0-521-595-564
LOFAR Radio Observatory Chief Scientist

Personal Interests

- Academic: Environmental sciences, “Cradle2Cradle” design, and urban planning.
- Athletics: Triathlons, running, baseball, and Georgia Tech athletics.
- Hobbies: Backpacking, reading, building model airplanes, and raising bonsai trees.