KENNETH W. CAVAGNOLO
CURRICULUM VITAE

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Citizenship: U.S.A.
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EDUCATION

Ph.D. Astrophysics, Michigan State University	2008
M.S. Astrophysics, *magna cum laude*, Michigan State University	2005
B.S. Physics, *magna cum laude*, Georgia Institute of Technology	2002

EMPLOYMENT

ANR Opales Postdoctoral Fellow, Observatoire de la Côte d'Azur	2010–Present
Waterloo Scholars Postdoctoral Fellow, University of Waterloo	2008–10
Research Assistant, X-ray astrophysics, Michigan State University	2003–08
Research Assistant, Planetary nebulae, Michigan State University	2002–03
Research Assistant, Eclipsing stellar binaries, Georgia Institute of Technology	2000–02

PROFESSIONAL PROFILE

- Intellectually flexible, *e.g.* applying research tools and techniques to non-science problems
- Ability and desire to quickly obtain a critical-mass of knowledge in a new field or topic
- Science background applicable to wide-range of fields, *e.g.* complex analysis, R&D, computing
- Honed professional oral, written, and presentation skills
- Enjoy small/large collaborations, building professional relationships, and peer communication
- Trained in quantitative analysis, critical thinking, detailed analysis, creative problem solving
- Formal graduate level education in applied mathematics, probability, and statistics

SCIENTIFIC SKILLS

- Expert of processing and reducing complex, high resolution, high-sensitivity images
- Extensive experience analyzing radio, infrared, optical, and high-energy (X-ray, γ-ray) data
- Fluent in HTML, IDL, LaTeX, PERL, and PYTHON programming languages
- Familiar with C/C++, FORTRAN, MATLAB, MEQTREES, MYSQL, SUPERMONGO, and TCL
- Extensive experience with MS Office, OpenOffice, Adobe Suite, and iLife
- Command of DOS, Linux, Macintosh, Solaris, and Windows computing architectures
- Mastery of AIPS, CASA, CIAO, IRAF, OSA, and SAS astronomical analysis software

AWARDS & HONORS

- Referee for the professional publications AJ, ApJ, ApJL, CanTAC, & MNRAS
- Sherwood K. Haynes Award for Outstanding Graduate Student
- MSU College of Natural Science Dissertation Fellow
- Georgia Institute of Technology President's List

- Georgia Institute of Technology Four Year Dean's List
- Perimeter Institute of Theoretical Physics Black Hole Reading Group

Collaborations & Memberships

IXO Science Associate	2011–Present
Consortiums: LOFAR, ASKAP (*EMU, POSSUM*), & SKA-Africa (*MeerKAT*)	2010–Present
ΣΞ National Scientific Research Society	2009–Present
American Astronomical Society	2002–Present
American Physical Society	2002–Present
ΣΠΣ National Physics Honor Society	2001–Present

Observing Experience

ASKAP-Boolardy Engineering Test Array (BETA)	2011
Low Frequency Array (LOFAR)	2011
Very Long Baseline Array (VLBA)	2011
Giant Metrewave Radio Telescope (GMRT)	2010
Very Large Array Radio Telescope (VLA)	2009

Grants & Proposals

PI, VLBA, *"Imaging the Misdirected QSO of IRAS 09104+4109"*	2010
Co-I, GMRT, *"Power and Particle Content of Extragalactic Radio Sources I–III"*	2008–10
Co-I, GMRT, *"Morphology of Steepest Spectrum Radio Sources in Galaxy Cluster Cores"*	2009
Co-I, NOAO, *"The Supermassive Cluster Survey I–V"*	2008–10
PI, CXO, *"IRAS 09104+4109: An Extreme Brightest Cluster Galaxy"*	2008
Co-I, CXO, *"Conduction and Multiphase Structure in the ICM"*	2008
Co-I, Spitzer, *"Star Formation and AGN Feedback in BCGs"*	2008
Co-I, Spitzer, *"Infrared Properties of a Control Sample of Brightest Cluster Galaxies"*	2008
Co-I, NSF, *"Star Formation in the Universe's Largest Galaxies"*	2008
Co-I, CXO, *"Quantifying Cluster Temperature Substructure"*	2007
Co-I, NRAO, *"Radio Feedback in Clusters and Galaxies"*	2007

Student Advisement

C. Kirkpatrick, Ph.D., ICM Abundance Distributions	2008–10
M. Rohanizadegan, Ph.D., Understanding SMBH Accretion and Spin	2008–10
J. King, NSERC REU, Quantifying Scatter in the $P_{\rm jet}$-$P_{\rm radio}$ Relation	2010
B. Whuiska, NSERC REU, The Largest BCG Cores in the *HST* Archive	2009
R. Myers, NSERC REU, Galaxy Cluster Radio Sources in the 400 deg^2 Survey	2009

Service & Teaching

Local Organizing Committee, *"Non-thermal Phenomena in Colliding Galaxy Clusters"*	2010
Local Organizing Committee, UW International Year of Astronomy	2009
Physics Tutor, *"Introductory Honors Physics I & II"*	2003
Substitute Instructor & Teaching Assistant, *"Visions of the Universe"*	2002,'03,'06

PUBLICATIONS IN PREPARATION

(18) *"Entropy Scaling Relations of ACCEPT Galaxy Clusters"*
K. Cavagnolo, G. M. Voit, M. Donahue, & S. Bruch – ApJL

(17) *"Black Hole Spin Axis Alteration and AGN Feedback Model Implications"*
K. Cavagnolo – ApJL

(16) *"Identifying AGN Feedback Relics Via Steep Spectrum Radio Sources"*
R. van Weeren, A. Edge, H. Röttgering, **K. Cavagnolo**, B. McNamara, M. Wise, M. Brüggen, G. Brunetti, & J. Croston – A&A

(15) *"The Radio Halo-Merger-Cooling Connection in Galaxy Clusters at $z \sim 0.5$"*
E. Orrù, C. Ferrari, M. Arnaud, **K. Cavagnolo**, J. Croston, N. Jetha, G. Pratt, E. Pointecouteau, & S. Raychaudhury – A&A

(14) *"Normalization and Scatter of the M–T Relation for Supermassive Galaxy Clusters"*
R. Mandelbaum, R. Nakajima, N. Bahcall, G. Bernstein, **K. Cavagnolo**, M. Donahue, J. Hughes, C. Keeton, A. Kravtsov, S. Miyazaki, N. Padmanabhan, & T. Schrabback – ApJ

FIRST AUTHOR PUBLICATIONS

(13) *"Direct Evidence of Radiative and Mechanical Feedback from the Quasar in IRAS 09104+4109"*
K. Cavagnolo, M. Donahue, G. M. Voit, B. McNamara, & M. Sun
Accepted to MNRAS 2011

(12) *"A Powerful AGN Outburst in RBS 797"*
K. Cavagnolo, B. McNamara, M. Wise, P. Nulsen, M. Brüggen, M. Gitti, & D. Rafferty
Accepted to ApJ 2011

(11) *"A Relationship Between AGN Jet Power and Radio Luminosity"*
K. Cavagnolo, B. McNamara, P. Nulsen, C. Carilli, C. Jones, & L. Bîrzan
ApJ Published, 2010

(10) *"Intracluster Medium Entropy Profiles for a Chandra Archival Sample Of Galaxy Clusters"*
K. Cavagnolo, M. Donahue, G. M. Voit, & M. Sun
ApJ Published, 2009

(9) *"An Entropy Threshold for Strong Hα and Radio Emission in the Cores of Galaxy Clusters"*
K. Cavagnolo, M. Donahue, G. M. Voit, & M. Sun
ApJ Published, 2008

(8) *"Bandpass Dependence of X-Ray Temperatures in Galaxy Clusters"*
K. Cavagnolo, M. Donahue, G. M. Voit, & M. Sun
ApJ Published, 2008

CO-AUTHORED PUBLICATIONS

(7) *"Anisotropic Metal-enriched Outflows Driven by AGN in Clusters of Galaxies"*
C. Kirkpatrick, B. McNamara, & **K. Cavagnolo**– Accepted to ApJL 2011

(6) *"Direct Evidence for an Outflow of Metal-Enriched Gas Along the Radio Jets of Hydra A"*
C. Kirkpatrick, M. Gitti, **K. Cavagnolo**, B. McNamara, L. David, P. Nulsen, & M. Wise
ApJL Published, 2009

(5) *"A Chandra X-ray Analysis of Abell 1664: Cooling, Feedback and Star Formation in the Central Cluster Galaxy"*
C. Kirkpatrick, B. McNamara, D. Rafferty, P. Nulsen, L. Birzan, F. Kazemzadeh, M. Wise, M. Gitti, & **K. Cavagnolo**
ApJ Published, 2009

(4) *"Conduction and the Star Formation Threshold in Brightest Cluster Galaxies"*
G. M. Voit, **K. Cavagnolo**, M. Donahue, D. Rafferty, B. McNamara, & P. Nulsen
ApJ Published, 2008

(3) *"Star Formation, Radio Sources, Cooling X-Ray Gas and Galaxy Interactions in the Brightest Cluster Galaxy in 2A0335+096"*
M. Donahue, M. Sun, C. O'Dea, G. M. Voit, & **K. Cavagnolo**
AJ Published, 2007

(2) *"s-Process Abundances in Planetary Nebulae"*
B. Sharpee, Y. Zhang, R. Williams, E. Pellegrini, **K. Cavagnolo**, J. Baldwin, M. Phillips, & X. Liu
ApJ Published, 2007

(1) *"Entropy Profiles in the Cores of Cooling Flow Clusters of Galaxies"*
M. Donahue, D. Horner, **K. Cavagnolo**, & G. M. Voit
ApJ Published, 2006

PRESENTED WORK

University of Wisconsin-Madison; The Monster's Fiery Breath Meeting — June 2009
Talk: *"The AGN Jet Power and Radio Power Relationship"*

University of Waterloo; Seminar — October 2008
Invited Talk: *"Using Galaxy Clusters as Galaxy Formation Laboratories"*

Leiden University; The Cool, Cooler, and Cold Meeting — September 2008
Invited Talk: *"Understanding Cluster Cores: The Role of Core Entropy"*

Center for Study of Cosmic Evolution; Seminar — July 2008
Invited Talk: *"Investigating Feedback and Relaxation in Clusters of Galaxies"*

University of Waterloo; Seminar — March 2008

Invited Talk: *"From Cluster Cosmology to Galaxy Formation in Under One Hour"*

NASA Space Science and Technology Center; Seminar February 2008
Invited Talk: *"The Effect of AGN Feedback on High-Precision Cosmology"*

Center for Study of Cosmic Evolution; Seminar January 2008
Invited Talk: *"Understanding Feedback in Galaxy Clusters"*

University of Michigan; Seminar October 2007
Invited Talk: *"Band Dependence of X-ray Temperatures"*

University of Alabama-Huntsville; Eight Years of Science with Chandra Meeting October 2007
Poster: *"The Entropy-Feedback Connection and Quantifying Cluster Virialization"*

American Astronomical Society Meeting December 2006
Poster: *"Chandra Studies of Dark Matter and Galaxy Formation: Signatures from the ICM"*

International Astronomical Union Symposium July 2006
Proceeding: *"Abundances of s-process elements in planetary nebulae: Br, Kr & Xe"*

American Astronomical Society Meeting December 2005
Poster: *"Studies of Entropy Distributions in X-ray Luminous Clusters of Galaxies"*

American Astronomical Society Meeting December 2004
Poster: *"Entropy Distributions in the Cores of Nearby X-ray Luminous Clusters of Galaxies"*

American Astronomical Society Meeting December 2004
Poster: *"Radio-Free Cluster Cooling Flows"*

REFERENCES

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