

# Steven Ehlert: Curriculum Vitae

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## Education & Positions

Postdoctoral Associate, Kavli Institute for Astrophysics and Space Research, Massachusetts Institute of Technology, August 2013-Present. Supervisor: Mark Bautz

Ph.D. Astrophysics, Stanford University, August 2008- July 2103, Advisor: Steven Allen, Thesis: "The Coevolution of Galaxies and their Environments in Massive Galaxy Clusters"

DAAD Research Fellowship, Max Planck Institute for Nuclear Physics, 2007-2008. Advisor: Werner Hofmann

B.S. Physics and Mathematics, *Magna Cum Laude*, Northwestern University, 2003-2007. Advisor: Melville Ulmer

## Awards and Fellowships

German Academic Exchange Program (DAAD) Research Fellowship, 2007-2008

Phi Beta Kappa Honors Society

Outstanding Undergraduate Honors Thesis, Physics Department, Northwestern University, 2007

## Talks and Proceedings

Ehlert, S.; et al., "X-ray Bright AGN in the Vicinity of Massive Galaxy Clusters", Half a Century of X-Ray Astronomy, Mykonos Island Greece, September 2012

Ehlert, S.; et al., "Extreme AGN Feedback in the most X-ray luminous cooling cores: MACSJ1931.8-2634", Snowcluster, Snowbird UT, March 2010

Becherini, Y.; Djannati-Atai, A.; Punch, M.; Bernlöhr, K.; Ehlert, S. ; Masbou, J.; Moulin, E.; Arribas, M. Paz, "HESS-II reconstruction strategy and performance in the low-energy (20-150 GeV) domain", 4th Meeting on High Energy Gamma Ray Astronomy , Heidelberg Germany, August 2008

Ehlert, S.; and Ulmer, M.P., "Iron Abundance and Temperature Gradients in High Redshift Galaxy Clusters", Meeting of the American Astronomical Society , Seattle WA, January 2007

## Successful Observing Proposals

Spring 2013: "A deep study of ram-pressure stripping, metal ridges, and AGN feedback in the Ophiuchus Cluster", *Chandra Cycle 15*, Steven Allen PI, 250 ks

Spring 2012: "An inside view: Does the fraction of X-ray AGN track the quenching of star formation in cluster galaxies?", *ESO VLT Period 90*, Anja von der Linden PI, 42 hours, 10 clusters

Spring 2012: "Tracing a Merger from Start to Finish in Abell 85" *Chandra Cycle 14* joint with *Suzaku*, Steve Allen Funding PI, Steven Ehlert Observing Co-I, 160+100 ks.

Fall 2010: "The Deep Impact of AGN Feedback in M84" *XMM-Newton Cycle 10* joint with *VLT*, Steven Ehlert PI, 130 ks+2 hours.

Fall 2010: "MACS J1931.8-2634: Destruction of a cluster cool core in technicolor", *ESO VLT Period 87A*, Anja von der Linden PI, 15 hours

## Teaching

All positions took place at Stanford University unless otherwise noted

Center for Teaching and Learning Liason, Physics Department, 2012-2013

Teaching Assistant Mentor, Physics Department, 2011-2012

Spring Quarter 2012: Physics 100, Teaching Assistant

Spring Quarter 2011: Physics 100/301, Teaching Assistant

Fall Quarter 2009: Physics 45 (Thermodynamics and Optics), Head Teaching Assistant

Winter Quarter 2009: Physics 41 (Mechanics), Section Teaching Assistant.

Further details on Teaching Positions:

The Physics 40 series (41,43, and 45) at Stanford is a series of introductory Physics courses that require the use of calculus. These courses are mandatory for young physics majors and most fields of engineering, and typical enrollment is approximately 300-400 students per quarter. Teaching assistants are typically given two sections of 18 students each for whom they supervise in a weekly 1 hour recitation section. The section teaching assistants are also responsible for grading problem sets and being the first contact for students when questions or concerns arise. All of the section teaching assistants are supervised by a head teaching assistant who communicates more directly with the instructor. The head teaching assistant's responsibilities include writing problem sets and examinations, providing vision and guidance to the section teaching assistants, and managing the unique administrative tasks that arise in a class of 300+ students.

Physics 100 at Stanford is laboratory-based observational astronomy course utilizing the 0.4 and 0.6 m telescopes at the Stanford Student Observatory. Every other year the course is also open to graduate students (known as Physics 301). We teach the fundamentals of observational astronomy, statistics, and data analysis using an analysis pipeline built from scratch combined with new and archival telescope data. The course culminates with the students proposing and performing their own original research projects utilizing telescope data from the Stanford Student Observatory or other public archives. Previous projects of note include reconstructing satellite orbits from CCD image streaks and the detections of an extra-solar planet using the transit method.

The Physics Department at Stanford, in order to make their instruction more effective for undergraduate students, works closely with the Center for Teaching and Learning (CTL) at Stanford University in order to maintain a high standard of teaching across all classes. One of the key components of this program is the Teaching Assistant (TA) Mentor program, where experienced TA's are assigned to help provide insight and advice to new TA's as needed. Additionally, the Mentor TA's also perform mid-quarter evaluations of their mentee TA's, which allow the new TA's the opportunity to adjust their teaching strategies before the end of the quarter. One Mentor TA in particular is chosen to represent the department as the liaison to the CTL, and help promote the exchange of ideas between the Physics Department and CTL. The CTL liaison also, in conjunction with the CTL, helps develop new teaching approaches for the Physics department based on the department's particular needs and previous experience.

## Additional Service

Representative to Congressional Offices, SLAC User's Organization, SLAC National Accelerator Laboratory

Journal Referee, *Astronomy and Astrophysics*

Further Details on Service Positions:

In March of 2012, I served as a member of the Slac Users Organization (SLUO, SLAC National Accelerator Laboratory, Menlo Park CA) on their annual trip to Washington D.C. in order to thank members of the United States Congress for their continued support for high energy particle physics and astrophysics. Additionally, we spoke to the Congressional offices to emphasize the importance of stable, healthy long-term funding to our community and the United States at large and the broader impacts that cutting edge pure science research. This trip is undertaken every year along with representatives from Fermilab and the US users of the Large Hadron Collider. Over the course of two days in Washington DC, I spoke with 13 Congressional Offices in the U.S. House of Representatives and Senate as well as directors of the National Science Foundation and Department of Energy.

## Skills and Competencies

Computer Languages: Bash and C-Shell, Python, IDL, C++

Machine Shop: Bandsaw, Lathe, Milling Machine

## Publications

### *Journal Articles*

All of these articles have been accepted for publication in peer-reviewed journals.

Urban, O.; Simionescu, A.; Werner, N.; Allen, S. W.; Ehlert, S.; Zhuravleva, I.; Morris, R. G.; Fabian, A. C.; Mantz, A.; Nulsen, P. E. J.; Sanders, J. S.; Takei, Y.; "Azimuthally Resolved X-Ray Spectroscopy to the Edge of the Perseus Cluster"; submitted to Monthly Notices of the Royal Astronomical Society, astro-ph # 1307.3592

Hlavacek-Larrondo, J.; Allen, S. W.; Taylor, G. B.; Fabian, A. C.; Canning, R. E. A.; Werner, N.; Sanders, J. S.; Grimes, C. K.; **Ehlert, S.**; von der Linden, A.; "Probing the extreme realm of AGN feedback in the massive galaxy cluster, RX J1532.9+3021", submitted to *Astrophysical Journal*, astro-ph # 1306.0907

**Ehlert, S.**; Allen, S.W.; von der Linden, A.; Werner, N.; Simionescu, Kenney, J.D.P.; A.; Million, E. T.; Finoguenov, A.; "Ripping at the Seams: The Network of Stripped Gas Surrounding M86", *Monthly Notices of the Royal Astronomical Society*, Volume 430, Issue 3

**Ehlert, S.**; Allen, S.W.; Brandt, W.N.; Xue, Y.Q.; Luo, B.; von der Linden, A.; Mantz, A.; and Morris, R. G. "X-ray Bright Active Galactic Nuclei in Massive Galaxy Clusters I: Number Counts and Spatial Distribution", *Monthly Notices of the Royal Astronomical Society*, Volume 428, Issue 4

**Ehlert, S.**; Allen, S. W.; von der Linden, A.; Simionescu, A.; Werner, N.; Taylor, G. B.; Gentile, G.; Ebeling, H.; Allen, M. T.; Applegate, D.; Dunn, R. J. H.; Fabian, A. C.; Kelly, P.; Million, E. T.; Morris, R. G.; Sanders, J. S.; Schmidt, R. W. "Extreme active galactic nucleus feedback and cool-core destruction in the X-ray luminous galaxy cluster MACS J1931.8-2634", *Monthly Notices of the Royal Astronomical Society* 2011, Volume 411, Issue 3

**Ehlert, S.**; Ulmer, M. P. "The radial dependence of temperature and iron abundance. Galaxy clusters from  $z = 0.14$  to  $z = 0.89$ ", *Astronomy and Astrophysics* 2009, Volume 503, Issue 1

Ulmer, M. P.; Graham, M. E.; Vaynman, S.; Echt, J.; Farber, M.; **Ehlert, S.**; Varlese, S. "Progress Toward Light Weight High Angular Resolution Multilayer Coated Optics", *Experimental Astronomy* 2005, Volume 20, Issue 1-3

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