THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

Massimiliano Bonamente, Ph.D.
Professor of Physics and Astronomy

Education

- Ph.D. degree in Physics, *UAHunstville*, 2000.
- MS degree in Physics, *UAHunstville*, 1999.
- B.S/M.S. *Laurea* degree in Electronic Engineering, minor in Astrophysics, *Universitá di Perugia*, 1996, 110/110 *e lode*.

Work Experience

- Employed at *UAH* since 2001.
- Professor of physics, *UAH*, since 2014
- Associate professor of physics (with tenure), *UAH*, 2010–2014.
- Assistant professor of physics, *UAH*, 2007–2010.
- Assistant research professor, *UAH*, 2001–2006.
- Postdoctoral scientist at *NASA MSFC*, 2001–2006.
- Postdoctoral associate, *Osservatorio astrofisico di Catania*, 2000-2001.
- Graduate research assistant, *UAH*, 1997-2000.

Summary of accomplishments

- Funded Reasearch: $3.4M in research grants as PI at UAH.
- Outstanding Faculty in the College of Science, UAH, 2011.
- Teaching: Taught 16 different courses for undergraduate and graduate students, in the areas of general physics, mathematics, statistics, thermodynamics, astrophysics and laboratories.
- Scientific Publications: 85 refereed publication, 24 as first-author, H-index 27 (source: ADS plus publications in Journal of Applied Statistics).
- Author of the graduate textbook *Statisics and analysis of scientific data*, Springer, Second Edition (2017).
- Student graduation: Advised and supported 5 M.S. and 4 Ph.D. students to degree completion at UAH.
- Conference organization: Main organizer of international conferences *SZXHuntsville2011* and *Alabama WHIM 2018*.

Refereed Publications

Ahoranta, J., and 9 colleagues 2019. Hot WHIM counterparts of FUV OVI absorbers: Evidence in the line-of-sight towards quasar 3C 273. arXiv e-prints arXiv:1912.06659, Astronomy and Astrophysics, in press.

Bonamente, M. 2019. Distribution of the C statistic with applications to the sample mean of Poisson data. arXiv e-prints arXiv:1912.05444, Journal of Applied Statistics, in press.

Bonamente, M., Ahoranta, J., Nevalainen, J., Holt, P. 2019. New Chandra Observations of PG 1116+215 to Investigate an Extragalactic O VIII WHIM Absorption Line. Research Notes of the American Astronomical Society 3, 75.

Nevalainen, J., and 10 colleagues 2019. To be or not to be: the case of the hot WHIM absorption in the blazar PKS 2155-304 sight line. Astronomy and Astrophysics 621, A88.

Bonamente, M. 2018. Probability models of chance fluctuations in spectra of astronomical sources with applications to X-ray absorption lines. Journal of Applied Statistics, https://doi.org/10.1080/02664763.2018.1531976

Abdellaoui, G., and 359 colleagues 2017. Meteor studies in the framework of the JEM-EUSO program. Planetary and Space Science 143, 245.

Abdellaoui, G., and 364 colleagues 2017. Cosmic ray oriented performance studies for the JEM-EUSO first level trigger. Nuclear Instruments and Methods in Physics Research A 866, 150.

Nevalainen, J., and 6 colleagues 2017. Discovery of Galactic O iv and O v X-ray absorption due to transition temperature gas in the PKS 2155-304 spectrum. Astronomy and Astrophysics 605, A47.

Bonamente, M., Ahoranta, J., Tilton, E., Tempel, E., Morandi, A. 2017. Characterization of the warm-hot intergalactic medium near the Coma cluster through high-resolution spectroscopy of X Comae. Monthly Notices of the Royal Astronomical Society 469, 3984.

Morandi, A., Sun, M., Mulchaey, J., Nagai, D., Bonamente, M. 2017. Gas distribution and clumpiness in the galaxy group NGC 2563. Monthly Notices of the Royal Astronomical Society 469, 2423.

Giles, P. A., and 8 colleagues 2017. Chandra measurements of a complete sample of X-ray luminous galaxy clusters: the luminosity-mass relation. Monthly Notices of the Royal Astronomical Society 465, 858.

Maughan, B. J., and 6 colleagues 2016. Hydrostatic and caustic mass profiles of galaxy clusters. Monthly Notices of the Royal Astronomical Society 461, 4182.

Bonamente, M., and 6 colleagues 2016. A possible Chandra and Hubble Space Telescope detection of extragalactic WHIM towards PG 1116+215. Monthly Notices of the Royal Astronomical Society 457, 4236.

Adams, J. H., and 287 colleagues 2015. Space experiment TUS on board the Lomonosov satellite as pathfinder of JEM-EUSO. Experimental Astronomy 40, 315.

Adams, J. H., and 287 colleagues 2015. Ground-based tests of JEM-EUSO components at the Telescope Array site, "EUSO-TA". Experimental Astronomy 40, 301.

Adams, J. H., and 287 colleagues 2015. The EUSO-Balloon pathfinder. Experimental Astronomy 40, 281.
Adams, J. H., and 287 colleagues 2015. JEM-EUSO: Meteor and nuclearite observations. Experimental Astronomy 40, 253.
Adams, J. H., and 288 colleagues 2015. Science of atmospheric phenomena with JEM-EUSO. Experimental Astronomy 40, 239.
Adams, J. H., and 287 colleagues 2015. Erratum: Erratum to: Ultra high energy photons and neutrinos with JEM-EUSO. Experimental Astronomy 40, 235.
Adams, J. H., and 287 colleagues 2015. Ultra high energy photons and neutrinos with JEM-EUSO. Experimental Astronomy 40, 215.
Adams, J. H., and 287 colleagues 2015. Performances of JEM-EUSO: energy and X $_{max}$ reconstruction. Experimental Astronomy 40, 183.
Adams, J. H., and 287 colleagues 2015. Erratum: Erratum to: Performances of JEM-EUSO: angular reconstruction. Experimental Astronomy 40, 179.
Adams, J. H., and 287 colleagues 2015. Performances of JEM-EUSO: angular reconstruction. The JEM-EUSO Collaboration. Experimental Astronomy 40, 153.
Adams, J. H., and 287 colleagues 2015. The JEM-EUSO observation in cloudy conditions. Experimental Astronomy 40, 135.
Adams, J. H., and 287 colleagues 2015. JEM-EUSO observational technique and exposure. Experimental Astronomy 40, 117.
Adams, J. H., and 287 colleagues 2015. Calibration aspects of the JEM-EUSO mission. Experimental Astronomy 40, 91.
Adams, J. H., and 287 colleagues 2015. The infrared camera onboard JEM-EUSO. Experimental Astronomy 40, 61.
Adams, J. H., and 287 colleagues 2015. The atmospheric monitoring system of the JEM-EUSO instrument. Experimental Astronomy 40, 45.
Adams, J. H., and 287 colleagues 2015. The JEM-EUSO instrument. Experimental Astronomy 40, 19.
Adams, J. H., and 287 colleagues 2015. The JEM-EUSO mission: An introduction. Experimental Astronomy 40, 3.
Nevalainen, J., and 11 colleagues 2015. Missing baryons traced by the galaxy luminosity density in large-scale WHIM filaments. Astronomy and Astrophysics 583, A142.
Landry, D., Bonamente, M., Giles, P., Maughan, B., Joy, M., Murray, S. 2013. Chandra measurements of a complete sample of X-ray luminous galaxy clusters: the gas mass fraction. Monthly Notices of the Royal Astronomical Society 433, 2790.
Plagge, T. J., and 12 colleagues 2013. CARMA Measurements of the Sunyaev-Zel'dovich Effect in RX J1347.5-1145. The Astrophysical Journal 770, 112.
Adams, J. H., and 260 colleagues 2013. An evaluation of the exposure in nadir observation of the JEM-EUSO mission. Astroparticle Physics 44, 76.
Bonamente, M., Landry, D., Maughan, B., Giles, P., Joy, M., Nevalainen, J. 2013. Chandra X-ray observations of Abell 1835 to the virial radius. Monthly Notices of the Royal Astronomical Society 428, 2812.
Marrone, D. P., and 24 colleagues 2012. LoCuSS: The Sunyaev-Zel'dovich Effect and Weak-lensing Mass Scaling Relation. The Astrophysical Journal 754, 119.

Hasler, N., and 21 colleagues 2012. Joint Analysis of X-Ray and Sunyaev-Zel'dovich Observations of Galaxy Clusters Using an Analytic Model of the Intracluster Medium. The Astrophysical Journal 748, 113.

Bonamente, M., and 21 colleagues 2012. Comparison of pressure profiles of massive relaxed galaxy clusters using the Sunyaev-Zel'dovich and x-ray data. New Journal of Physics 14, 25010.

Bonamente, M., Nevalainen, J. 2011. X-Ray Spectroscopy of AS1101 with Chandra, XMM-Newton, and ROSAT: Bandpass Dependence of the Temperature Profile and Soft Excess Emission. The Astrophysical Journal 738, 149.

Williamson, R., and 74 colleagues 2011. A Sunyaev-Zel'dovich-selected Sample of the Most Massive Galaxy Clusters in the 2500 deg^2 South Pole Telescope Survey. The Astrophysical Journal 738, 139.

Bulbul, G. E., and 6 colleagues 2011. The effect of helium sedimentation on galaxy cluster masses and scaling relations. Astronomy and Astrophysics 533, A6.

Gralla, M. B., and 25 colleagues 2011. Sunyaev-Zel'dovich Effect Observations of Strong Lensing Galaxy Clusters: Probing the Overconcentration Problem. The Astrophysical Journal 737, 74.

Story, K., and 62 colleagues 2011. South Pole Telescope Detections of the Previously Unconfirmed Planck Early Sunyaev-Zel'dovich Clusters in the Southern Hemisphere. The Astrophysical Journal 735, L36.

Fusco-Femiano, R., Orlandini, M., Bonamente, M., Lapi, A. 2011. Supermodel Analysis of the Hard X-ray Excess in the Coma Cluster. The Astrophysical Journal 732, 85.

Foley, R. J., and 72 colleagues 2011. Discovery and Cosmological Implications of SPT-CL J2106-5844, the Most Massive Known Cluster at z>1. The Astrophysical Journal 731, 86.

Lehto, T., Nevalainen, J., Bonamente, M., Ota, N., Kaastra, J. 2010. Suzaku observations of X-ray excess emission in the cluster of galaxies A 3112. Astronomy and Astrophysics 524, A70.

Culverhouse, T. L., and 22 colleagues 2010. Galaxy Clusters at z >= 1: Gas Constraints from the Sunyaev-Zel'dovich Array. The Astrophysical Journal 723, L78.

Lieu, R., Quenby, J., Bonamente, M. 2010. The Non-thermal Intracluster Medium. The Astrophysical Journal 721, 1482.

Bulbul, G. E., Hasler, N., Bonamente, M., Joy, M. 2010. An Analytic Model of the Physical Properties of Galaxy Clusters. The Astrophysical Journal 720, 1038.

Blaksley, C., Bonamente, M. 2010. Dark matter and modified Newtonian dynamics in a sample of high-redshift galaxy clusters observed with Chandra. New Astronomy 15, 159.

Nevalainen, J., Eckert, D., Kaastra, J., Bonamente, M., Kettula, K. 2009. XMM-Newton and INTEGRAL analysis of the Ophiuchus cluster of galaxies. Astronomy and Astrophysics 508, 1161.

Marrone, D. P., and 21 colleagues 2009. LoCuSS: A Comparison of Sunyaev-Zel'dovich Effect and Gravitational-Lensing Measurements of Galaxy Clusters. The Astrophysical Journal 701, L114.

Lieu, R., Bonamente, M. 2009. Soft X-Ray Excess of Clusters: A Thermal Filament Model and the Strong Lensing of Background Galaxy Groups. The Astrophysical Journal 698, 1301.

Bonamente, M., Lieu, R., Bulbul, E. 2009. The Diffuse Soft Excess Emission in the Coma Cluster from the ROSAT All-Sky Survey. The Astrophysical Journal 696, 1886.

Mroczkowski, T., and 18 colleagues 2009. Application of a Self-Similar Pressure Profile to Sunyaev-Zel'dovich Effect Data from Galaxy Clusters. The Astrophysical Journal 694, 1034.

Bonamente, M., Swartz, D. A., Weisskopf, M. C., Murray, S. S. 2008. Swift XRT Observations of the Possible Dark Galaxy VIRGOHI 21. The Astrophysical Journal 686, L71.

Bonamente, M., Joy, M., LaRoque, S. J., Carlstrom, J. E., Nagai, D., Marrone, D. P. 2008. Scaling Relations from Sunyaev-Zel'dovich Effect and Chandra X-Ray Measurements of High-Redshift Galaxy Clusters. The Astrophysical Journal 675, 106.

Bonamente, M., Nevalainen, J., Lieu, R. 2007. Soft and Hard X-Ray Excess Emission in Abell 3112 Observed with Chandra. The Astrophysical Journal 668, 796.

Coble, K., and 9 colleagues 2007. Radio Sources toward Galaxy Clusters at 30 GHz. The Astronomical Journal 134, 897.

Nevalainen, J., Bonamente, M., Kaastra, J. 2007. Revisiting the Soft X-Ray Excess Emission in Clusters of Galaxies Observed with XMM-Newton. The Astrophysical Journal 656, 733.

LaRoque, S. J., and 6 colleagues 2006. X-Ray and Sunyaev-Zel'dovich Effect Measurements of the Gas Mass Fraction in Galaxy Clusters. The Astrophysical Journal 652, 917.

Bonamente, M., Joy, M. K., LaRoque, S. J., Carlstrom, J. E., Reese, E. D., Dawson, K. S. 2006. Determination of the Cosmic Distance Scale from Sunyaev-Zel'dovich Effect and Chandra X-Ray Measurements of High-Redshift Galaxy Clusters. The Astrophysical Journal 647, 25.

de Plaa, J., and 8 colleagues 2006. Chemical evolution in Sérsic 159-03 observed with XMM-Newton. Astronomy and Astrophysics 452, 397.

Bonamente, M., Lieu, R., Kaastra, J. 2005. ROSAT observations of the soft X-ray background and of the cluster soft excess emission in the Hercules supercluster. Astronomy and Astrophysics 443, 29.

Bonamente, M., Lieu, R., Mittaz, J. P. D., Kaastra, J. S., Nevalainen, J. 2005. Thermal and Nonthermal Nature of the Soft Excess Emission from Sérsic 159-03 Observed with XMM-Newton. The Astrophysical Journal 629, 192.

de Plaa, J., and 8 colleagues 2005. The temperature structure in the core of Sérsic 159-03. Advances in Space Research 36, 601.

Mittaz, J., Lieu, R., Cen, R., Bonamente, M. 2004. Warm-hot Intergalactic Medium Emission and the Cluster Soft Excess: A Model Comparison. The Astrophysical Journal 617, 860.

Bonamente, M., Joy, M. K., Carlstrom, J. E., Reese, E. D., LaRoque, S. J. 2004. Markov Chain Monte Carlo Joint Analysis of Chandra X-Ray Imaging Spectroscopy and Sunyaev-Zel'dovich Effect Data. The Astrophysical Journal 614, 56.

Bonamente, M., Dixon, W. V. D. 2004. FUSE Observations of Galactic and Intrinsic Absorption in the Spectrum of the Seyfert 1 Galaxy 2MASX J21362313-6224008. The Astrophysical Journal 609, 597.

Nevalainen, J., Oosterbroek, T., Bonamente, M., Colafrancesco, S. 2004. Nonthermal Hard X-Ray Emission in Galaxy Clusters Observed with the BeppoSAX PDS. The Astrophysical Journal 608, 166.

Takahashi, Y., Bonamente, M., Weiler, T., Ebisuzaki, T. 2003. Z-Bursts with Hot Dark Matter (Relic Neutrinos) Generating the EUV and Soft X-Ray Glow in Cluster of Galaxies. International Cosmic Ray Conference 3, 1689.

Bonamente, M., Joy, M. K., Lieu, R. 2003. A Massive Warm Baryonic Halo in the Coma Cluster. The Astrophysical Journal 585, 722.

Nevalainen, J., Lieu, R., Bonamente, M., Lumb, D. 2003. Soft X-Ray Excess Emission in Clusters of Galaxies Observed with XMM-Newton. The Astrophysical Journal 584, 716.

LaRoque, S. J., and 11 colleagues 2003. Sunyaev-Zeldovich Effect Imaging of MACS Galaxy Clusters at z>0.5. The Astrophysical Journal 583, 559.

Bonamente, M., Lieu, R., Joy, M. K., Nevalainen, J. H. 2002. The Soft X-Ray Emission in a Large Sample of Galaxy Clusters with the ROSAT Position Sensitive Proportional Counter. The Astrophysical Journal 576, 688.

Durret, F., Slezak, E., Lieu, R., Dos Santos, S., Bonamente, M. 2002. The extreme ultraviolet excess emission in five clusters of galaxies revisited. Astronomy and Astrophysics 390, 397.

Bonamente, M., Lieu, R., Mittaz, J. P. D. 2001. Sersic 159-03: Discovery of the Brightest Soft X-Ray Excess Emitting Cluster of Galaxies. The Astrophysical Journal 561, L63.

Bonamente, M., Lieu, R., Nevalainen, J., Kaastra, J. S. 2001. ROSAT and BeppoSAX Evidence of Soft X-Ray Excess Emission in the Shapley Supercluster: A3571, A3558, A3560, and A3562. The Astrophysical Journal 552, L7.

Bonamente, M., Lieu, R., Mittaz, J. P. D. 2001. The Extreme-Ultraviolet Excess Emission of the Virgo and A1795 Clusters: Reobservation with in Situ Background Measurements. The Astrophysical Journal 547, L7.

Bonamente, M., Lieu, R., Mittaz, J. P. D. 2001. The Multiphase Nature of the Intracluster Medium of Some Clusters of Galaxies. The Astrophysical Journal 546, 805.

Lieu, R., Bonamente, M., Mittaz, J. P. D. 2000. EUV and X-ray observations of Abell 2199: a three-phase intracluster medium with a massive warm component. Astronomy and Astrophysics 364, 497.

Bonamente, M. 2000. EUV and soft x-ray excess emission from clusters of galaxies. Ph.D. Thesis.

Lieu, R., Bonamente, M., Mittaz, J. P. D., Durret, F., Dos Santos, S., Kaastra, J. S. 1999. Reobserving the Extreme-Ultraviolet Emission from Abell 2199: In Situ Measurement of Background Distribution by Offset Pointing. The Astrophysical Journal 527, L77.

Lieu, R., Bonamente, M., Mittaz, J. P. D. 1999. Extreme-Ultraviolet Images of the Clusters of Galaxies A2199 and A1795: Clear Evidence for a Separate and Luminous Emission Component. The Astrophysical Journal 517, L91.

Lieu, R., Ip, W.-H., Axford, W. I., Bonamente, M. 1999. Nonthermal Origin of the EUV and Soft X-Rays from the Coma Cluster:Cosmic Rays in Equipartition with the Thermal Medium. The Astrophysical Journal 510, L25.