

# CURRICULUM VITAE

Andrea Merloni

## Personal Data

**Surname:** Merloni                      **Name:** Andrea  
**Affiliation:** Max Planck Institut für Astrophysik  
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Germany  
**Nationality:** Italian

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## Professional and Educational History

2007-date: Postdoc, Max Planck Institut für Extraterrestrische Physik (MPE), Garching, Germany  
2002-2007: Postdoc, Max Planck Institut für Astrophysik (MPA), Garching, Germany  
2001: Research assistant, Institute of Astronomy, University of Cambridge, UK  
1998-2001: PhD, Institute of Astronomy, University of Cambridge, UK  
1997-98: Civil Servant, ‘Soprintendenza per i Beni Artistici e Storici di Roma’, Italy  
1991-96: Undergraduate Diploma in Physics, *summa cum laude*, University *La Sapienza* of Rome, Italy  
1986-91: ‘Liceo Classico’ (High School in Humanities) *T.Mamiani*, Rome, Italy

## Teaching Experience, Invited Seminars and Review Talks

2007: Invited talk at the Department of Astrophysics, Radboud Univ. Nijmegen, The Netherlands  
2006: Invited review at the conference “Radiation Backgrounds from the First Stars, Galaxies and Black Holes”, College Park, MD, USA  
2005: Invited review at the conference “Superunification of AGN”, Elba Island, Italy  
2005: Seminar at the Physics Department, University of Rome 3, Italy  
2004: Seminaires d’Astrophysique at the OMP, Toulouse, France  
2004: Invited review at the conference “From X-ray binaries to Quasars”, Amsterdam, The Netherlands  
2004: Invited seminar at the Institute of Astronomy, Cambridge, UK  
2004: Invited seminar at MPE, Garching, Germany  
2003: Invited seminar at the Astronomical Observatory of Bologna  
2003: Invited seminar at the Astronomical Institute “A. Pannekoek”, University of Amsterdam

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2002: Invited review, 5th Italian AGN meeting, Como, Italy

2002, 2003: Institute seminars at MPA, Garching

2002: Invited seminar at SISSA, Trieste

2001: Seminar at the Institute of Astronomy, Cambridge

1999: Seminar at the Physics Department, University of Rome 3

1997: Assistant lecturer for the undergraduate course of ‘Theoretical Astrophysics’ at the University of Rome “La Sapienza”

### Professional Services

Reviewer: Member of the EVN (European VLBI) Program Committee (2007-2010)

Referee: The Astrophysical Journal, Astronomy & Astrophysics, and Monthly Notices of the Royal Astronomical Society

Organizer: weekly High Energy/Accretion group meetings, MPA (2003-2006)

Organizer: Meeting: ‘Coronae of stars and accretion discs’, Bonn (12/2006) [SOC]

Reviewer: PPARC rolling grant proposals (2006)

Reviewer: NASA’s Guest Observing programs (Chandra Stellite, 2005)

Organizer: Meeting: ‘From X-ray binaries to Quasars, Black Holes on all mass scales’, Amsterdam (7/2004) [SOC]

Organizer: Conference: ‘Growing black holes’, Garching (6/2004) [LOC]

### Successful Observing Proposals

2006: CHANDRA Proposal ‘A snapshot X-ray/Radio survey of AGNs selected from the long menu of SDSS galaxies’. P.I. S. Heinz (MIT, USA)

2004: CHANDRA Proposal ‘Testing and extending the fundamental plane of black hole activity’. P.I. R. Fender (U. Amsterdam)

2004: VLA Proposal ‘The steep ultraluminous X-ray source in NGC 4244’. P.I. R. Fender (U. Amsterdam)

### Language Skills

ITALIAN: Mother tongue; ENGLISH, FRENCH and SPANISH: Very good reading, speaking and writing abilities; GERMAN: Good reading, speaking and writing abilities

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**LIST of PUBLICATIONS****(a) Books (Editor)**

1. **A. Merloni**, S. Nayakshin & R. Sunyaev (eds.):  
*Growing Black Holes: Accretion in a Cosmological Context*,  
Proceedings of the Conference held in Garching, Germany, on June 21-25, 2004. ESO  
astrophysics symposia, Berlin: Springer, (2005)

**(b) Papers in refereed journals**

1. **A. Merloni** & S. Heinz:  
*Measuring the kinetic power of AGN in the radio mode*  
MNRAS, submitted, (2007)
2. S. Heinz, **A. Merloni** & J. Schwab:  
*The kinetic luminosity function and the jet production efficiency of growing black holes*  
Astrophys. J. Lett., **658**, L9 (2007)
3. **A. Merloni** & S. Nayakshin:  
*On the limit-cycle instability in magnetized accretion discs*,  
Mon. Not. R. Astronom. Soc., **372**, 728 (2006)
4. **A. Merloni**, J. Malzac, A.C. Fabian & R.R. Ross:  
*On the X-ray spectra of luminous, inhomogeneous accretion flows*,  
Mon. Not. R. Astronom. Soc., **370**, 1699 (2006)
5. E. Gallo, R.P. Fender, J.C.A. Miller-Jones, P.G. Jonker, S. Heinz, **A. Merloni**, T.J.  
Maccarone, M. van der Klis:  
*A radio-emitting outflow in the quiescent state of A0620-00: implications for modelling  
low-power black hole binaries*,  
Mon. Not. R. Astronom. Soc., **370**, 1351 (2006)
6. **A. Merloni**, E. Körding, S. Heinz, S. Markoff, T. Di Matteo & H. Falcke:  
*Why the fundamental plane of black hole activity is not simply a distance driven artifact*,  
New Astronomy, **11**, 567 (2006)
7. S. Heinz & **A. Merloni**:  
*Constraints on relativistic beaming from estimators of the unbeamed flux*,  
Mon. Not. R. Astronom. Soc., **355**, L1 (2004)
8. **A. Merloni**, G. Rudnick & T. Di Matteo:  
*Tracing the cosmological assembly of stars and supermassive black holes in galaxies*,  
Mon. Not. R. Astronom. Soc., **354**, L37 (2004)
9. **A. Merloni**:  
*The anti-hierarchical growth of supermassive black holes*,  
Mon. Not. R. Astronom. Soc., **353**, 1035 (2004)
10. J. Malzac, **A. Merloni** & A. C. Fabian:  
*Jet-disc coupling through a common energy reservoir in the black hole XTE J1118+480*,  
Mon. Not. R. Astronom. Soc., **351**, 253 (2004)

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11. **A. Merloni**, S. Heinz & T. Di Matteo:  
*A fundamental plane of black hole activity*,  
Mon. Not. R. Astronom. Soc., **345**, 1057 (2003)
  12. **A. Merloni**, A. C. Fabian:  
*Iron  $K\alpha$  line profiles and the inner boundary condition of accretion flows*,  
Mon. Not. R. Astronom. Soc., **342**, 951 (2003)
  13. **A. Merloni**:  
*Beyond the standard accretion disc model: coupled magnetic disc-corona solutions with a physically motivated viscosity law*,  
Mon. Not. R. Astronom. Soc., **341**, 1051 (2003)
  14. **A. Merloni**, A. C. Fabian:  
*Coronal outflow dominated accretion discs: a new possibility for low luminosity black holes?*,  
Mon. Not. R. Astronom. Soc., **332**, 165 (2002)
  15. A. C. Fabian, D. R. Ballantyne, **A. Merloni**, S. Vaughan, K. Iwasawa, T. Boller:  
*How the X-ray spectrum of a Narrow-Line Seyfert 1 galaxy may be reflection dominated*,  
Mon. Not. R. Astron. Soc., **331**, L35 (2002)
  16. **A. Merloni**, A. C. Fabian:  
*Thunderclouds and accretion discs: a model for the spectral and temporal variability of Seyfert 1 galaxies*,  
Mon. Not. R. Astronom. Soc., **328**, 958 (2001)
  17. P.-O. Petrucci, **A. Merloni**, A. C. Fabian, F. Haardt, E. Gallo:  
*The effects of a comptonizing corona on the appearance of the reflection components in accreting black hole spectra*,  
Mon. Not. R. Astronom. Soc., **328**, 501 (2001)
  18. E. Ramirez-Ruiz, **A. Merloni** & M. J. Rees:  
*Quiescent times in gamma-ray bursts: II. Dormant periods in the central engine ?*,  
Mon. Not. R. Astronom. Soc., **324**, 1147 (2001)
  19. **A. Merloni** & A. C. Fabian:  
*Accretion disc coronae as magnetic reservoirs*,  
Mon. Not. R. Astronom. Soc., **321**, 549 (2001)
  20. E. Ramirez-Ruiz & **A. Merloni**:  
*Quiescent times in gamma-ray bursts: I. An observed correlation between the durations of subsequent emission episodes*,  
Mon. Not. R. Astronom. Soc., **320**, L25 (2001)
  21. **A. Merloni**, T. Di Matteo & A. C. Fabian:  
*Magnetic flares and the optical variability of the X-ray transient XTE J1118+480*,  
Mon. Not. R. Astron. Soc. , **318**, L15 (2000)
  22. **A. Merloni**, A. C. Fabian & R. R. Ross:  
*On the interpretation of the multicolour disc model for black hole candidates*,  
Mon. Not. R. Astron. Soc. , **313**, 193-197 (2000)

23. D. Bini, **A. Merloni** & R.T. Jantzen:  
*Geometric interpretation of the Frenet-Serret frame description of circular orbits in stationary axisymmetric spacetimes*,  
Class. Quantum Grav. **16**, 1333-1348 (1999)
24. **A. Merloni**, M. Vietri, L. Stella & D. Bini:  
*On gravitomagnetic precession around black holes*,  
Mon. Not. R. Astron. Soc. , **304**, 155-159 (1999)
25. D. Bini, **A. Merloni** & R.T. Jantzen:  
*Adapted Frames for Spacetime Splittings with an Additional Observer Family*,  
Nuovo Cim. B, **113B** , 611-620 (1998)
26. **A. Merloni**, R. Ruffini & V. Torroni:  
*A relativistic extended Fermi-Thomas-like equation for a self-gravitating system of fermions*,  
Nuovo Cim. B, **113B**, 255-266 (1998)
27. **A. Merloni** & R. Ruffini:  
*Relativistic Ionization by Compression of Atoms and Ions: a Propedeutical Study for Degenerate Stellar Structures*,  
Int. Jou. Mod. Phys. D, **5**, 507, (1996)

### (c) Papers in non-refereed journals and conference proceedings

1. S. Heinz, **A. Merloni** & T. Di Matteo:  
*Why the Fundamental Plane of Black Hole Activity is not a Distance Artifact* Proceedings of: "Triggering Relativistic Jets" (Eds. William H. Lee & Enrico Ramírez-Ruiz) Revista Mexicana de Astronomía y Astrofísica (Serie de Conferencias) Vol. 27, pp. 114-121 (2007).
2. **A. Merloni** & S. Heinz:  
*Cosmological evolution of the AGN kinetic luminosity function*  
Proceedings of the IAU symposium No. 238 "Black holes: from stars to galaxies - across the range of masses", Prague, Aug. 2006. V. Karas & G. Matt (eds.), in press.
3. J. Malzac, **A. Merloni** & T. Suebsuwong:  
*Models for the X-ray spectra and variability of luminous accreting black holes*  
to appear in Astronomical Notes as Proceedings of the XMM-Newton Science Operations Centre Workshop "Variable and Broad Iron Lines around Black Holes", Madrid, 26-28 June 2006; Astron.Nachr. 88, 789-792 (2006)
4. **A. Merloni**, S. Heinz & T. Di Matteo:  
*A fundamental plane of black hole activity: pushing forward the unification scheme*  
Proceedings of the meeting "From X-ray Binaries to Quasars: Black Hole Accretion on All Mass Scales", held in Amsterdam, July 2004, Eds T.Maccarone, R.Fender, L.Ho, Astrophys. and Space Science, Volume 300, Issue 1-3, p. 45 (2005)
5. S. Heinz, **A. Merloni**, T. Di Matteo & R. A. Sunyaev:  
*On the relationship between the jets from X-ray binaries and AGNs*  
Proceedings of the meeting "From X-ray Binaries to Quasars: Black Hole Accretion on All Mass Scales", held in Amsterdam, July 2004, Eds T.Maccarone, R.Fender, L.Ho, Astrophys. and Space Science, Volume 300, Issue 1-3, p. 15 (2005)

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6. J. Malzac, **A. Merloni**, & A. C. Fabian:  
*Jet-Disc Coupling in the Accreting Black Hole Xte J1118+480*  
Proceedings of the meeting “From X-ray Binaries to Quasars: Black Hole Accretion on All Mass Scales”, held in Amsterdam, July 2004, Eds T.Maccarone, R.Fender, L.Ho, *Astrophys. and Space Science*, Volume 300, Issue 1-3, p. 31 (2005)
  7. **A. Merloni**:  
*Anti-Hierarchical Growth of Supermassive Black Holes and QSO lifetimes*  
Proceedings of the Conference “Growing Black Holes”, held in Garching, Germany, on June 21-25, 2004, edited by A. Merloni, S. Nayakshin and R. Sunyaev, Springer-Verlag series of “ESO Astrophysics Symposia”, 2005, p. 453.
  8. S. Heinz, R. A. Sunyaev, **A. Merloni** & T. Di Matteo:  
*The importance of Jets for Black Hole Growth*  
Proceedings of the Conference “Growing Black Holes”, held in Garching, Germany, on June 21-25, 2004, edited by A. Merloni, S. Nayakshin and R. Sunyaev, Springer-Verlag series of “ESO Astrophysics Symposia”, 2005, p. 371.
  9. **A. Merloni**:  
*The fundamental plane of black hole activity and the census of the local black holes’ population*  
“AGN Physics with the Sloan Digital Sky Survey”,  
Proceedings of a conference held in Princeton, NJ, USA, 27-31 July 2003, Edited by Gordon T. Richards and Patrick B. Hall, ASP Conference Series, Volume 311. San Francisco: Astronomical Society of the Pacific, 2004., p.95
  10. **A. Merloni** & A. C. Fabian:  
*Iron  $K\alpha$  line profiles and the inner boundary condition for magnetized accretion flows*  
“Active Galactic Nuclei: from Central Engine to Host Galaxy”,  
Meeting held in Meudon, France, July 23-27, 2002, Eds.: S. Collin, F. Combes and I. Shlosman. ASP (Astronomical Society of the Pacific), Conference Series, Vol. 290, p. 117.
  11. **A. Merloni**:  
*Modes of disc accretion onto black holes*  
Proceedings of the 5th Italian AGN Meeting “Inflows, Outflows and Reprocessing around black holes”,  
Como, Italy, June 11-14, 2002. <http://www.unico.it/ilaria/AGN5/proceedings.html>
  12. **A. Merloni**:  
*Microquasars in the low/hard state: strong coronae, compact jets, and the high frequency variability*  
Proceedings of the ‘4th Microquasars Workshop’,  
Institut d’Etudes Scientifiques de Cargèse, Corsica, France, May 27 - June 1, 2002. Eds. P. Durouchoux, Y. Fuchs and J. Rodriguez. Published by the Center for Space Physics, Kolkata (India), p. 2105
  13. **A. Merloni** & A. C. Fabian:  
*Magnetic flares and outflows from structured accretion disc coronae*  
To appear in the Proceedings of the conference ‘New Visions of the X-ray Universe in the XMM-Newton and Chandra era’,  
ESTEC, Noordwijk, (The Netherlands), November 26-30, 2001.

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14. **A. Merloni** & A. C. Fabian:  
*Thunderclouds above accretion discs: a model for Seyfert 1 variability*  
To be published in the Proceedings of the MAXI workshop on AGN variability, held in Nikko, Japan, March 10-11, 2001.
  15. E. Ramirez-Ruiz & **A. Merloni**:  
*Energy outflows in  $\gamma$ -ray bursts: discontinuous versus continuous ?*  
Proceedings of ‘Gamma 2001: Gamma-Ray Astrophysics’, Baltimore, MD, 4-6 April, 2001. Eds. S. Ritz, N. Gehrels, and C.R. Shrader. AIP Conference Proceedings, Vol. 587. Melville, NY: American Institute of Physics, 2001., p. 158.
  16. **A. Merloni** & E. Ramirez-Ruiz:  
*Quiescent times in gamma-ray bursts*  
Proceedings of the International workshop ‘Gamma-Ray Bursts in the Afterglow Era’, Rome, 17-20 October, 2000. Eds. E. Costa, F. Frontera, and J. Hjorth. Berlin Heidelberg: Springer, 2001, p. 72.
  17. **A. Merloni**, T. Di Matteo & A. C. Fabian:  
*XTE J1118+480: Clues on the nature of the accretion flow from the optical variability*,  
To be published in ‘Proceedings of the Third Microquasar Workshop: Granada Workshop on galactic relativistic jet sources’, Eds: A. J. Castro-Tirado, J. Greiner and J. M. Paredes, Astrophysics and Space Science Supplement, 2001, 276, p. 213.
  18. **A. Merloni**, A. C. Fabian & R. R. Ross:  
*The meaning of the multicolour disc model parameters for black hole candidates: can we trust the inner disc measurements ?*,  
Proceedings of the Conference ‘X-ray Astronomy ’99. Stellar Endpoints, AGN and the Diffuse Background’. Published by Melville, NY: American Institute of Physics, 2001. Eds. N.E. White, G. Malaguti, and G.G.C. Palumbo. AIP conference proceedings, Vol. 599. p.770
  19. D. Bini, R.T. Jantzen & **A. Merloni**:  
*Absolute and Relative Frenet-Serret Frames for Accelerated Black Hole Circular Orbits*,  
Proceedings of the First ICRA Network Workshop on the Lense-Thirring Effect (1998) (C. Sigismondi, Ed.), World Scientific (Singapore), 1999, 000–028.
  20. D. Bini, **A. Merloni** & R.T. Jantzen:  
*Circular Orbits in the Kerr Spacetime: Centrifugal Forces and Anti-Newtonian Behaviour*,  
Proceedings of the Eight Marcel Grossman Meeting on General Relativity (1997), (T. Piran, Ed.), World Scientific (Singapore), 1998, 000–003.
  21. **A. Merloni** & R. Ruffini:  
*On the Equation of State of White Dwarfs: The Mass Radius Relation*,  
Proceedings of the 5th Italian-Korean Meeting on Relativistic Astrophysics (1997) (H.Lee, Ed.), World Scientific (Singapore), 1999, 000–004.