

PERSONAL INFORMATION

Family name, first name: **Francesco Haardt**

Nationality: Italian

Date of birth: April 19th, 1964

Website: www.dfm.uninsubria.it/fh

HIGHLIGHTS (as 2016, Oct 02)

Google Scholar H-index: 49; i10-index: 94

Google Scholar total number of citations: 10971;

EDUCATION

1994 *PhD* in Astrophysics, SISSA/ISAS, Trieste (Italy)

1993 *Master* in Astrophysics, SISSA/ISAS, Trieste (Italy)

1991 *Laurea degree* in Physics, University of Milan, Milan (Italy)

CURRENT POSITION

2017– present *Professore Ordinario (Full Professor)*, Department of Science and High Technology, Università dell'Insubria, Como (Italy)

PREVIOUS POSITIONS

2002 – 2017 *Professore Associato*, Department of Science, Università dell'Insubria, Como (Italy)

2000 – 2001 *Ricercatore Universitario*, Department of Science, Università dell'Insubria, Como (Italy)

1999 – 1999 *Ricercatore Universitario*, Department of Physics, Università di Milano, Milan (Italy)

1997 – 1998 *PostDoctoral Fellow*, Department of Physics, Università di Milano, Milan (Italy)

1995 – 1996 *Forkerassistant*, Chalmers Institute of Technology, Gothenburg (Sweden)

1994 *Research Fellow*, STScI, Baltimore (USA)

1991 – 1994 *PhD Student*, SISSA/ISAS, Trieste (Italy)

SHORT TERM VISITING POSITIONS

2012 *Visiting Scientist (1 m.)*, KITP, Santa Cruz (USA)

2010 *Visiting Professor (3 m.)*, UCSC, Santa Cruz (USA)

2006 *Visiting Scientist (1 m.)*, KITP, Santa Barbara (USA)

2004 *Visiting Scientist (2 m.)*, KITP, Santa Barbara (USA)

1991 *Visiting PhD Student (2 m.)*, Leicester University, Leicester (UK)

FELLOWSHIPS AND AWARDS

2013 – *Abilitazione Scientifica Nazionale* for Full Professor, Italian Ministry of University and Research

1996 – 1997 Postdoctoral fellowship, Department of Physics, Università di Milano, Milan (Italy)

1994 – 1994 Visiting Graduate Student Fellowship, STScI, Baltimore (USA)

1991 – 1994 PhD student fellowship, SISSA/ISAS, Trieste (Italy)

1991 Della Riccia Foundation starting fellowship, Firenze (Italy)

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

2016 – 2018 Tommaso Zana (PhD)

2015 – 2017 Matteo Bonetti (PhD)

2013 – 2015 Alessandro Lupi (PhD)

2011 – 2013 Cermen Montuori (PhD)

2010 – 2012 Massimo Cavadini (PhD)

2008 – 2009 Mariangela Campisi (PostDoc)

2007 – 2009 Ruben Salvaterra (PostDoc)

2007 – 2007 Bernadetta Devecchi (PostDoc)

2004 – 2007 Massimo Dotti (PhD)

2003 – 2006 Alberto Sesana (PhD)

1999 – 2002 Marta Volonteri (PhD)

1998 – 2000 Emanuele Ripamonti (PhD)

TEACHING ACTIVITIES

- 2012 – present Lecturer – Extragalactic Astronomy, Università dell’Insubria, Como (Italy)
2007 – present Lecturer – Cosmology, Università dell’Insubria, Como (Italy)
2007 – present Lecturer – Electromagnetism, Università dell’Insubria, Como (Italy)
2007 – 2015 Lecturer – Special Relativity, Università dell’Insubria, Como (Italy)
2005 – 2005 Lecturer – Thermodynamics, Università dell’Insubria, Como (Italy)
2002 – 2006 Lecturer – Statistics and Probability, Università dell’Insubria, Como (Italy)
2001 – 2003 Lecturer – Lab of Mechanics, Università dell’Insubria, Como (Italy)
2002 Lecturer – Reionization, Graduate School, Asiago (Italy)
2000 Lecturer – Reionization, Graduate School, Rome (Italy)
1999 – 2000 Teaching Assistant – Lab of Mechanics, Università dell’Insubria, Como (Italy)
1998 Lecturer – Radiation and Accretion Processes, Graduate School, Riccione (Italy)
1995 – 1995 Lecturer – Radiative Processes, Gothenburg University, Gothenburg (Sweden)
1994 – 1994 Lecturer – Solar Physics, Gothenburg University, Gothenburg (Sweden)

ORGANISATION OF SCIENTIFIC MEETINGS

- 2012 Scientific and local organisation of Sigrav School “Astrophysical Black Holes”, Como (Italy)
2009 Scientific organisation of “Reionization and Cosmology”, within the International School for PhD students “Francesco Lucchin”, Spineto (Italy)
2008 Scientific and local organisation of Astro-GR meeting, Como (Italy)

INSTITUTIONAL RESPONSIBILITIES

- 2014 –present Member of Council of Graduate School in Physics and Astrophysics, Università dell’Insubria, Como (Italy)
2006 –2013 Member of Council of Graduate School in Astronomy and Astrophysics, Università dell’Insubria, Como (Italy)

COMMISSIONS OF TRUST

- 2017 Reviewer, ERC (European Commission)
2017 External expert, RADIOFOREGROUNDS, EC project
2013 Reviewer, VICI grants, NWO (Netherlands)
2012 PhD Final Scientific Evaluation Committee, SISSA/ISAS, Trieste (Italy)
2012 SOC, Sigrav School “Astrophysical Black Holes”, Como (Italy)
2008 SOC, Astro-GR meeting, Como (Italy)
2005-07-09-11-13 Member of Commission for the Admission at the Graduate School in Astronomy and Astrophysics, Università dell’Insubria, Como (Italy)
1994-toady Reviewer for A&A, ApJ, MNRAS

MEMBERSHIPS OF SCIENTIFIC SOCIETIES AND INSTITUTIONS

- 2010 – present Associated Member of INFN (Istituto Nazionale di Fisica Nucleare), Italy
2004 – present Associated Member of INAF (Istituto Nazionale di Astrofisica), Italy

MAJOR ONGOING COLLABORATIONS

- Dott. Michele Fumagalli, UVB observations in local galaxies, Durham (UK)
Prof. Monica Colpi, Dynamics of massive black holes, UniBicocca, Milano (Italy)
Dott. Massimo Dotti, Evolution of SMBH binaries, UniBicocca, Milano (Italy)
Prof. Gabriele Ghisellini, AGN and high energy astrophysics, INAF, Merate (Italy)
Prof. Piero Madau, IGM and UV-background, UCSC, Santa Cruz CA (USA)
Prof. Marta Volonteri, Evolution of supermassive black holes, IAP, Paris (France)
Prof. Claudia Scarlata, Lyman continuum observations of galaxies, UMN, Minneapolis (USA)

SCIENTIFIC ACHIEVEMENTS

I am an astrophysicist and cosmologist with three major research fields of interest, high energy astrophysics, cosmic evolution of massive black holes, and physical cosmology. On these topics I have published more than 100 papers on main refereed international journals. They have been cited more than 7200 times, with 16 papers with more than 100 citations. I am the 1st or 2nd author in all my first 7 more cited papers (# of citations: 272, 307, 441, 443, 475, 486, 1003 to date), and all have a total of 3 or less authors; h-index=41

(source ADS, <http://adsabs.harvard.edu>, as June 2014). My early studies were mainly focused on the high energy emission from accreting black holes, both of stellar and super-massive variety, and during my PhD I obtained breakthrough results proposing an innovative model of accretion disk corona successful in explaining the main features of the X-ray emissions from accreting black holes. Later on I started a research activity focused on the cosmic ionising background, the physics of the intergalactic medium, and the characterisation of the diverse cosmic populations of UV emitters, galaxies and active galactic nuclei. My studies of the IGM and the UVB models I proposed in 1996, 2001, and more recently in 2012 became the standard input in most of the cosmological simulations and studies of QSO absorption systems performed in the last 15 years. As a matter of fact, Haardt & Madau (1996) has been cited more than 1100 times at the time of writing this proposal, with a constant rate of ~ 60 citations/year since its publication. Moreover, the widely used code for photoionisation studies CLOUDY (Ferland et al. 2013) adopts my background models as predefined default cosmological UV background. In the last 10 years I started to work on the cosmic evolution of massive black holes, mentoring as PhD advisor 3 successful young researcher (M. Volonteri, A. Sesana and M. Dotti).

LIST OF REFEREED PAPERS IN THE LAST 5 YEARS (2012-2016)

1. Post-Newtonian evolution of massive black hole triplets in galactic nuclei - I. Numerical implementation and tests, Bonetti M., Haardt F., Sesana A., Barausse E., 2016, MNRAS, 461, 4419, [arXiv:1604.08770]
2. The X-Ray Properties of Million Solar Mass Black Holes, Plotkin R.~M., Gallo E., Haardt F., Miller B.~P., Wood C.~J.~L., Reines A.~E., Wu J., Greene J.~E., 2016, ApJ, 825, 139, [arXiv:1605.00742]
3. The Early Growth of the First Black Holes, Johnson J.~L., Haardt F., 2016, PASA, 33, e007, [arXiv:1601.05473]
4. Growing massive black holes through supercritical accretion of stellar-mass seeds, Lupi A., Haardt F., Dotti M., Fiacconi D., Mayer L., Madau P., 2016, MNRAS, 456, 2993, [arXiv:1512.02651]
5. Lyman Continuum Escape Fraction of Star-forming Dwarf Galaxies at $z \sim 1$, Rutkowski M.~J., Scarlata C., Haardt F., Siana B., Henry A., Rafelski M., Hayes M., Salvato M., Pahl A.~J., Mehta V., Beck M., Malkan M., Teplitz H.~I., 2016, ApJ, 819, 81, [arXiv:1511.01998]
6. Bar formation as driver of gas inflows in isolated disc galaxies, Fanali R., Dotti M., Fiacconi D., Haardt F., 2015, MNRAS, 454, 3641, [arXiv:1509.08474]
7. Massive black hole and gas dynamics in mergers of galaxy nuclei - II. Black hole sinking in star-forming nuclear discs, Lupi A., Haardt F., Dotti M., Colpi M., 2015, MNRAS, 453, 3437, [arXiv:1509.02920]
8. Cosmic Reionization after Planck: Could Quasars Do It All?, Madau P., Haardt F., 2015, ApJ, 813, L8, [arXiv:1507.07678]
9. CMB quenching of high-redshift radio-loud AGNs, Ghisellini G., Haardt F., Ciardi B., Sbarrato T., Gallo E., Tavecchio F., Celotti A., 2015, MNRAS, 452, 3457, [arXiv:1505.05512]
10. The photoheating of the intergalactic medium in synthesis models of the UV background, Puchwein E., Bolton J.~S., Haehnelt M.~G., Madau P., Becker G.~D., Haardt F., 2015, MNRAS, 450, 4081, [arXiv:1410.1531]
11. High-redshift active galactic nuclei and H I reionisation: limits from the unresolved X-ray background, Haardt F., Salvaterra R., 2015, A&A, 575, L16, [arXiv:1502.03089]
12. Massive black hole and gas dynamics in galaxy nuclei mergers - I. Numerical implementation, Lupi A., Haardt F., Dotti M., 2015, MNRAS, 446, 1765, [arXiv:1410.0959]
13. The Photon Underproduction Crisis, Kollmeier J.~A., Weinberg D.~H., Oppenheimer B.~D., Haardt F., Katz N., Dav{e} R., Fardal M., Madau P., Danforth C., Ford A.~B., Peebles M.~S., McEwen J., 2014, ApJ, 789, L32, [arXiv:1404.2933]

14. Super-critical Growth of Massive Black Holes from Stellar-mass Seeds, Madau P., Haardt F., Dotti M., 2014, *ApJ*, 784, L38, [arXiv:1402.6995]
15. Radio-loud active galactic nuclei at high redshifts and the cosmic microwave background, Ghisellini G., Celotti A., Tavecchio F., Haardt F., Sbarato T., 2014, *MNRAS*, 438, 2694, [arXiv:1311.7147]
16. Black-hole mass estimates for a homogeneous sample of bright flat-spectrum radio quasars, Castignani G., Haardt F., Lapi A., De Zotti G., Celotti A., Danese L., 2013, *A&A*, 560, A28, [arXiv:1309.4108]
17. Can supermassive black hole seeds form in galaxy mergers?, Ferrara A., Haardt F., Salvaterra R., 2013, *MNRAS*, 434, 2600, [arXiv:1306.6635]
18. The role of relativistic jets in the heaviest and most active supermassive black holes at high redshift, Ghisellini G., Haardt F., Della Ceca R., Volonteri M., Sbarato T., 2013, *MNRAS*, 432, 2818, [arXiv:1304.1152]
19. Spectrum of the unresolved cosmic X-ray background: what is unresolved 50 years after its discovery, Moretti A., Vattakunnel S., Tozzi P., Salvaterra R., Severgnini P., Fugazza D., Haardt F., Gilli R., 2012, *A&A*, 548, A87, [arXiv:1210.6377]
20. Search for sub-parsec massive binary black holes through line diagnosis - II, Montuori C., Dotti M., Haardt F., Colpi M., Decarli R., 2012, *MNRAS*, 425, 1633, [arXiv:1207.0813]
21. Limits on the high redshift growth of massive black holes, Salvaterra R., Haardt F., Volonteri M., Moretti A., 2012, *A&A*, 545, L6, [arXiv:1209.1095]
22. Evolution of binary black holes in self gravitating discs. Dissecting the torques, Roedig C., Sesana A., Dotti M., Cuadra J., Amaro-Seoane P., Haardt F., 2012, *A&A*, 545, A127, [arXiv:1202.6063]
23. Radiative Transfer in a Clumpy Universe. IV. New Synthesis Models of the Cosmic UV/X-Ray Background, Haardt F., Madau P., 2012, *ApJ*, 746, 125, [arXiv:1105.2039]