

# CURRICULUM VITAE

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## I. Personal

Date of Birth: April 30 1961

Nationality: American

## II. Education

BSc with First Class Honours in Astrophysics, Queen Mary College, University of London, England, awarded August 1 1983.

MPhil in Physics, with a mark of 30/30 cum laude, International School for Advanced Studies, Trieste, Italy, awarded October 16 1985.

DPhil in Physics, International School for Advanced Studies, Trieste, Italy, awarded September 10 1986. Thesis Title: *The Stability of Thick Accretion Disks*. Supervisor: Marek A. Abramowicz.

## III. Employment

October 1 1986 to September 30 1989: Chaim Weizmann Research Fellow in Theoretical Physics at the California Institute of Technology.

October 12 1989 to August 31 1993: Research Associate at the Canadian Institute for Theoretical Astrophysics, University of Toronto.

September 1 1993 to May 31 1998: Assistant Professor at the Department of Physics, University of California, Santa Barbara.

June 1 1998 to June 30 2004: Associate Professor at the Department of Physics, University of California, Santa Barbara

July 1 2004 to present: Professor at the Department of Physics, University of California, Santa Barbara

## IV. Publications

### (a) Articles in refereed journals

- Davis, S. W., Woo, J.-H., & **Blaes, O. M.** 2007. *The UV Continuum of Quasars: Models and SDSS Spectral Slopes*, ApJ, submitted.
- Fragile, P. C., **Blaes, O. M.**, Anninos, P., & Salmonson, J. D. 2007. *Global General Relativistic MHD Simulation of a Tilted Black-Hole Accretion Disk*, ApJ, in press.
- Blaes, O. M.**, Šrámková, E., Abramowicz, M. A., Kluźniak, W., & Torkelsson, U. 2007. *Epicyclic Oscillations of Fluid Bodies. Paper III. Newtonian Non-Slender Torus*, ApJ, in press.
- Blaes, O.**, Hirose, S., & Krolik, J. H. 2007. *Surface Structure in an Accretion Disk Annulus with Comparable Radiation and Gas Pressure*, ApJ, in press.
- Krolik, J. H., Hirose, S., & **Blaes, O.** 2007. *Thermodynamics of an Accretion Disk Annulus with Comparable Radiation and Gas Pressure*, ApJ, in press.
- Davis, S. W., Done, C., & **Blaes, O. M.** 2006. *Testing Accretion Disk Theory in Black Hole X-ray Binaries*, ApJ, 647, 525-538.
- Arras, P., **Blaes, O.**, & Turner, N. J. 2006. *Quasi-Periodic Oscillations from Magnetorotational Turbulence*, ApJ, 645, L65-L68.
- Blaes, O. M.**, Davis, S. W., Hirose, S., Krolik, J. H., & Stone, J. M. 2006. *Magnetic pressure support and accretion disk spectra*, ApJ, 645, 1402-1407.
- Blaes, O. M.**, Arras, P., & Fragile, P. C. 2006. *Oscillation modes of relativistic slender tori*, MNRAS, 369, 1235-1252.
- Abramowicz, M. A., **Blaes, O. M.**, Horák, J., Kluźniak, W., & Rebusco, P. 2006. *Epicyclic oscillations of fluid bodies: II. Strong Gravity*, Class. Quantum Grav., 23, 1689-1696.
- Kishimoto, M., Antonucci, R., & **Blaes, O.** 2005. *The dust-eliminated shape of quasar spectra in the near-infrared: a hidden part of the big blue bump*, MNRAS, 364, 640-648.
- Socrates, A., **Blaes, O.**, Hungerford, A., & Fryer, C. L. 2005. *The Neutrino Bubble Instability: A Mechanism for Generating Pulsar Kicks*, ApJ, 632, 531-562.
- Turner, N. J., **Blaes, O. M.**, Socrates, A., Begelman, M. C., & Davis, S. W. 2005. *The Effects of Photon Bubble Instability in Radiation-Dominated Accretion Disks*, ApJ, 624, 267-288.
- Davis, S. W., **Blaes, O. M.**, Hubeny, I., & Turner, N. J. 2005. *Relativistic Accretion Disk Models of High State Black Hole X-ray Binary Spectra*, ApJ, 621, 372-387.
- Shang, Z., Brotherton, M. S., Green, R. F., Kriss, G. A., Scott, J., Quijano, J. K., **Blaes, O.**, Hubeny, I., Hutchings, J., Kaiser, M. E., Koratkar, A., Oegerle, W., & Zheng, W. 2005. *Quasars and the Big Blue Bump*, ApJ, 619, 41-59.

- Kishimoto, M., Antonucci, R., Boisson, C., & **Blaes, O.** 2004. *The Buried Balmer-Edge Signatures from Quasars*, MNRAS, 354, 1065-1092.
- Ballantyne, D. R., Turner, N. J., & **Blaes, O. M.** 2004. *X-ray Reflection from Inhomogeneous Accretion Disks: I. Toy Models and Photon Bubbles*, ApJ, 603, 436-448.
- Socrates, A., Davis, S. W., & **Blaes, O.** 2004. *Turbulent Comptonization in Black Hole Accretion Disks*, ApJ, 601, 405-413.
- Blaes, O.**, & Socrates, A. 2003. *Local Radiative Hydrodynamic and Magnetohydrodynamic Instabilities in Optically Thick Media*, ApJ, 596, 509-537.
- Kishimoto, M., Antonucci, R., & **Blaes, O.** 2003. *A First Close Look at the Balmer Edge Behavior of the Quasar Big Blue Bump*, MNRAS, 345, 253-260.
- Chiang, J., & **Blaes, O.** 2003. *Using Multiwavelength Observations to Determine the Black Hole Mass and Accretion Rate in the Type 1 Seyfert Galaxy NGC 5548*, ApJ, 586, 97-111.
- Blaes, O.**, Lee, M. H., & Socrates, A. 2002. *The Kozai Mechanism and the Evolution of Binary Supermassive Black Holes*, ApJ, 578, 775-786.
- Blaes, O.**, Hubeny, I., Agol, E., & Krolik, J. H. 2001. *Non-LTE, Relativistic Accretion Disk Fits to 3C 273 and the Origin of the Lyman Limit Spectral Break*, ApJ, 563, 560-568.
- Hubeny, I., **Blaes, O.**, Krolik, J. H., & Agol, E. 2001. *Non-LTE Models and Theoretical Spectra of Accretion Disks in Active Galactic Nuclei. IV. Effects of Compton Scattering and Metal Opacities*, ApJ, 559, 680-702.
- Chiang, J., & **Blaes, O.** 2001. *Thermal Comptonization and Disk Thermal Reprocessing in NGC 3516*, ApJ, 557, L15-L18.
- Blaes, O.**, & Socrates, A. 2001. *Local Dynamical Instabilities in Magnetized, Radiation Pressure Supported Accretion Disks*, ApJ, 553, 987-998.
- Agol, E., Jones, B., & **Blaes, O.** 2000. *Keck Mid-Infrared Imaging of QSO 2237+0305*, ApJ, 545, 657-663.
- Hubeny, I., Agol, E., **Blaes, O.**, & Krolik, J. 2000. *Non-LTE models and theoretical spectra of accretion disks in active galactic nuclei III. Integrated spectra for hydrogen-helium disks*, ApJ, 533, 710-728.
- Chiang, J., Reynolds, C. S., **Blaes, O. M.**, Nowak, M. A., Murray, N., Madejski, G., Marshall, H. L., & Magdziarz, P. 2000. *Simultaneous EUVE/ASCA/RXTE Observations of NGC 5548*, ApJ, 528, 292-305.
- Magdziarz, P., **Blaes, O. M.**, Zdziarski, A. A., Johnson, W. N., & Smith, D. A. 1998. *A spectral decomposition of the variable optical, ultraviolet, and X-ray continuum of NGC 5548*, MNRAS, 301, 179-192.
- Hsu, C.-M., & **Blaes, O.** 1998. *Compton scattering of polarized radiation in two phase accretion disks in active galactic nuclei*, ApJ, 506, 658-672.
- Thompson, C., & **Blaes, O.** 1998. *Magnetohydrodynamics in the Extreme Relativistic*

*Limit*, Phys. Rev. D, 57, 3219-3234.

- Agol, E., **Blaes, O.**, & Ionescu-Zanetti, C. 1998. *Polarization from magnetized accretion disks: II. The effects of absorption opacity on Faraday rotation*, MNRAS, 293, 1-17.
- Blaes, O.**, Hurt, T., Antonucci, R., Hurley, K., & Smette, A. 1997. *Infrared observations of the possible X-ray counterpart to the 1992 May 1 gamma-ray burst*, ApJ, 479, 868-874.
- Blaes, O.**, & Agol, E. 1996. *Polarization near the Lyman edge in accretion disk atmosphere models of quasars*, ApJ, 469, L41-L44.
- Agol, E., & **Blaes, O.** 1996. *Polarization from magnetized accretion disks in active galactic nuclei*, MNRAS, 282, 965-976.
- Blaes, O.**, Warren, O., & Madau, P. 1995. *Accreting, isolated neutron stars: III. Pre-heating of infalling gas and cometary HII regions*, ApJ, 454, 370-381.
- Clarke, T. E., **Blaes, O.**, & Tremaine, S. 1994. *Do gamma-ray bursts come from the Oort cloud?*, AJ, 107, 1873-1878.
- Madau, P., & **Blaes, O.** 1994. *Constraints on accreting, isolated neutron stars from the ROSAT and EUVE surveys*, ApJ, 423, 748-752.
- Blaes, O. M.**, & Balbus, S. A. 1994. *Local shear instabilities in weakly ionized, weakly magnetized disks*, ApJ, 421, 163-177.
- Blaes, O.**, & Madau, P. 1993. *Can we observe accreting, isolated neutron stars?*, ApJ, 403, 690-705.
- Blaes, O. M.**, Blandford, R. D., Madau, P., & Yan, L. 1992. *On the evolution of slowly accreting neutron stars*, ApJ, 399, 634-645.
- Blaes, O. M.**, & Webster, R. L. 1992. *Using gamma-ray bursts to detect a cosmological density of compact objects*, ApJ, 391, L63-L66.
- Blaes, O.**, & Rajagopal, M. 1991. *The statistics of slow interstellar accretion onto neutron stars*, ApJ, 381, 210-219.
- Blaes, O.**, Blandford, R., Madau, P., & Koonin, S. 1990. *Slowly accreting neutron stars and the origin of gamma-ray bursts*, ApJ, 363, 612-627.
- Blaes, O. M.**, Goldreich, P. M., & Villumsen, J. V. 1990. *The dominant local instabilities in an Einstein-de Sitter universe*, ApJ, 361, 331-337.
- Blaes, O.**, Blandford, R., Goldreich, P., & Madau, P. 1989. *Neutron starquake models for gamma-ray bursts*, ApJ, 343, 839-848.
- Blaes, O.**, & Hawley, J. 1988. *Nonaxisymmetric disk instabilities: a linear and nonlinear synthesis*, ApJ, 326, 277-291.
- Abramowicz, M., **Blaes, O.**, & Ghosh, P. 1987. *A new example of the Papaloizou-Pringle instability*, ApJ, 323, 629-633.
- Blaes, O. M.** 1987. *Stabilization of non-axisymmetric instabilities in a rotating flow by*

*accretion on to a central black hole*, MNRAS, 227, 975-992.

**Blaes, O.**, & Glatzel, W. 1986. *On the stability of incompressible constant angular momentum cylinders*, MNRAS, 220, 253-258.

**Blaes, O.** 1985. *Oscillations of slender tori*, MNRAS, 216, 553-563.

**Blaes, O.** 1985. *An upper limit to the growth rate of instabilities in constant specific angular momentum tori*, MNRAS, 212, 37P-40P.

*(b) Articles in refereed conference proceedings*

**Blaes, O. M.** 1994. *Theories of gamma-ray bursts* (Review article for the 1993 INTEGRAL workshop on The Multi-Wavelength Approach to Gamma-Ray Astronomy), ApJS, 92, 643-649.

Webster, R., & **Blaes, O.** 1993. *Are gamma-ray bursts at cosmological distances?*, PASAu, 10, 271-273.

*(c) Telegrams and circulars*

Drinkwater, M. J., Jones, L. A., **Blaes, O. M.**, Hurt, T., Antonucci, R., & Hurley, K. 1997. *GRB 920501*, IAU Circular No. 6600.

*(d) Invited Review Articles and Lectures*

**Blaes, O. M.** 2003. *Physics Fundamentals of Luminous Accretion Disks Around Black Holes*, in *Accretion Disks, Jets, and High Energy Phenomena in Astrophysics*, Proceedings of Session LXXVIII of Les Houches Summer School, Chamonix, France, August 2002, V. Beskin, G. Henri, F. Menard, G. Pelletier, and J. Dalibard eds. (EDP Science: Paris and Springer: Berlin), 137-185.

Koratkar, A., & **Blaes, O.** 1999. *The ultraviolet and optical continuum emission in active galactic nuclei: the status of accretion disks*, PASP, 111, 1-30.

*(e) Articles in non-refereed conference proceedings*

Fragile, P. C., Anninos, P., **Blaes, O. M.**, & Salmonson, J. D. 2007. *3D Relativistic MHD Simulation of a Tilted Accretion Disk Around a Rapidly Rotating Black Hole*, in Proceedings of the 11th Marcel Grossmann Meeting on General Relativity, ed. H. Kleinert, R. T. Jantzen, & R. Ruffini, in press

**Blaes, O.** 2006. *Accretion Disks in AGNs*, in *The Central Engine of Active Galactic Nuclei*, ed. L. C. Ho & J.-M. Wang (San Francisco: ASP)

- Kishimoto, M., Antonucci, R., & **Blaes, O.** 2006. *The near-IR shape of the big blue bump emission from quasars: under the hot dust emission*, in *The Central Engine of Active Galactic Nuclei*, ed. L. C. Ho & J.-M. Wang (San Francisco: ASP)
- Socrates, A., Davis, S. W., & **Blaes, O.** 2006. *Turbulent Comptonization in Relativistic Accretion Disks*, *AdSpR*, 38, 2880-2883.
- Kishimoto, M., Antonucci, R., Boisson, C., & **Blaes, O.** 2004. *Revealing AGN by Polarimetry*, in *Astronomical Polarimetry: Current Status and Future Directions*, ASP Conference Series 343, eds. A. Adamson, C. Aspin, & C. J. Davis, 435.
- Turner, N. J., Yorke, H. W., Socrates, A., & **Blaes, O. M.** 2004. *Photon bubbles in young massive stars*, in *Gravitational Collapse: from Massive Stars to Planets*, eds. G. Garcia-Segura, G. Tenorio-Tagle, J. Franco, & H. W. Yorke, *Rev. Mex. AASC*, 22, 54-57.
- Kishimoto, M., Antonucci, R., Boisson, C., & **Blaes, O.** 2004. *Accretion around supermassive black holes: the detection of the Balmer edge signature from quasars*, in *Stellar Mass, Intermediate Mass, and Supermassive Black Holes*, *Progress of Theoretical Physics Supplement*, No. 155, 166-169.
- Chiang, J., & **Blaes, O.** 2004. *Using Multiwavelength Observations to Estimate the Black Hole Masses and Accretion Rates in Seyfert Galaxies*, in *AGN Physics with the Sloan Digital Sky Survey*, ASP Conference Series, G. T. Richards and P. B. Hall, eds., 127.
- Antonucci, R., Kishimoto, M., Boisson, C., & **Blaes, O.** 2004. *The Shape of the Big Blue Bump as Revealed by Spectropolarimetry* in *AGN Physics with the Sloan Digital Sky Survey*, ASP Conference Series, G. T. Richards and P. B. Hall, eds., 381.
- Blaes, O.** 2004. *Accretion Disks Based on Real Physics*, in *AGN Physics with the Sloan Digital Sky Survey*, ASP Conference Series, G. T. Richards and P. B. Hall, eds., 121.
- Davis, S., **Blaes, O.**, Turner, N., & Socrates, A. 2004. *Effects of Fluid Instabilities on Accretion Disk Spectra*, in *AGN Physics with the Sloan Digital Sky Survey*, ASP Conference Series, G. T. Richards and P. B. Hall, eds., 135.
- Kishimoto, M., Antonucci, R., & **Blaes, O.** 2003. *A First Close Look at the Balmer-edge Behavior of Quasar Big Blue Bump*, in *Active Galactic Nuclei: from Central Engine to Host Galaxy*, eds. S. Collin, F. Combes, & I. Shlosman, ASP Conference Series, vol. 290, 217.
- Chiang, J., & **Blaes, O.** 2001. *Thermal Comptonization and Disk Thermal Reprocessing in Type 1 Seyfert Galaxies*, in *JHU/LHEA Workshop on X-ray Emission from Accretion onto Black Holes*, eds. T. Yaqoob & J. H. Krolik, published electronically at [www.pha.jhu.edu/groups/astro/workshop2001](http://www.pha.jhu.edu/groups/astro/workshop2001).
- Blaes, O. M.**, Hubeny, I., Agol, E., & Krolik, J. H. 2001. *Thermal Emission from Accretion Disks*, in *JHU/LHEA Workshop on X-ray Emission from Accretion onto Black Holes*, eds. T. Yaqoob & J. H. Krolik, published electronically at [www.pha.jhu.edu/groups/astro/workshop2001](http://www.pha.jhu.edu/groups/astro/workshop2001).

- Shields, G. A., Agol, E., & **Blaes, O.** 2001. *The puzzle of the Lyman continuum polarization of QSOs*, in *The Seventh Texas-Mexico Conference on Astrophysics: Flows, Blows, and Glows*, ed. W. H. Lee & S. Torres-Peimbert, *Revista Mexicana de Astronomia y Astrofisica (Serie de Conferencias)*, 10, 87-95.
- Blaes, O.** 2000. *Supermassive Black Holes As Gravitational Wave Sources for LISA*, in *Gravitational Waves, Third Edoardo Amaldi Conference*, ed. S. Meshkov, (Melville, NY: AIP), 248-254.
- Magdziarz, P., **Blaes, O.**, & Madejski, G. 1999. *Variability of the UV/Soft X-ray Continuum in NGC 5548*, in *Workshop on High Energy Processes in Accreting Black Holes*, ed. J. Poutanen & R. Svensson, (San Francisco: ASP), 204-209.
- Blaes, O.** 1998. *General Relativity As Seen In X-rays: What Can LISA Tell Us That We Don't Already Know?*, in *Laser Interferometer Space Antenna, Second International LISA Symposium on the Detection and Observation of Gravitational Waves in Space*, ed. W. Folkner, (Woodbury, NY: AIP), 57-60.
- Blaes, O.** 1998. *Optical/Ultraviolet Continuum Emission Theory in Radio Quiet Quasars and Active Galactic Nuclei*, in *Accretion Processes in Astrophysical Systems: Some Like It Hot!*, eds. S. S. Holt & T. R. Kallman, (Woodbury, NY: AIP), 161-170.
- Agol, E., Hubeny, I., & **Blaes, O.** 1998. *Continuum spectra of quasar accretion disk models*, in *Accretion Processes in Astrophysical Systems: Some Like It Hot!*, eds. S. S. Holt & T. R. Kallman, (Woodbury, NY: AIP), 175-178.
- Magdziarz, P., & **Blaes, O.** 1998. *A model of the broad-band continuum of NGC 5548*, *The Hot Universe, Proceedings of the 188th Symposium of the IAU*, eds. K. Koyama, S. Kitamoto, & M. Itoh (Dordrecht: Kluwer), 430-431.
- Magdziarz, P., **Blaes, O.**, Zdziarski, A. A., Johnson, W. N., & Smith, D. A. 1997. *Broad-band continuum and variability of NGC 5548*, *Proceedings of the 4th Compton Symposium*, eds. Dermer, C. D., & Kurfess, J. D., (Woodbury, NY: AIP), 1288-1292.
- Blaes, O.** & Agol, E. 1997. *Optical/Ultraviolet Continuum Polarization of AGN Accretion Disks*, *Accretion Phenomena and Related Outflows: IAU Colloquium 163, ASP Conference Series, Vol. 121*, eds. D. T. Wickramasinghe, L. Ferrario, & G. V. Bicknell, (San Francisco: ASP), 610-614.
- Blaes, O.**, Antonucci, R., Hurley, K., & Hurt, T. 1996. *Deep Infrared Imaging of the Putative X-ray Counterpart to GRB920501*, in *Gamma-ray bursts: 3rd Huntsville Symposium*, C. Kouveliotou, M. F. Briggs, G. J. Fishman, (New York: AIP), 589-593.
- Blaes, O.** 1994. *Coalescence of neutron star binaries*, in *The Evolution of X-Ray Binaries*, S. S. Holt & C. S. Day, (New York: AIP), 245-254.
- Madau, P., **Blaes, O.**, Blandford, R., & Goldreich, P. 1989. *Neutron starquakes and the nature of gamma-ray bursts*, in *Proceedings of the 1988 International School of Plasma Astrophysics, Varenna, Italy*, T. D. Guyenne & J. J. Hunt, (Noordwijk: ESA), 247-250.

**Blaes, O.** 1988. *The stability of thick accretion disks*, in *Supermassive Black Holes*, M. Kafatos, (Cambridge: Cambridge University Press), 334-343.

Abramowicz, M., **Blaes, O.**, & Lu, J. 1986. *On the Papaloizou and Pringle instability*, in *Structure and Evolution of Active Galactic Nuclei*, G. Giuricin et al., (Dordrecht: Reidel), 113-127.

*(f) Other scholarly writing*

**Blaes, O.** 2004. *A Universe of Disks*, *Scientific American*, October 2004, 48-57.

Dressler, A., Allamandola, L., **Blaes, O. M.**, et al. (many others) 2002. *ORIGINS 2003, Roadmap for the Office of Space Science Origins Theme*, NASA/Jet Propulsion Laboratory publication JPL 400-1060.

**Blaes, O.** 2001, Book Review on *Exploring Black Holes: Introduction to General Relativity*, by E. F. Taylor and J. A. Wheeler, page 59 in November 2001 issue of *Physics Today*.