MATTHEW WILLIAM CHOPTUIK

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Vancouver, BC, CANADA
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Citizenship: Canadian
Date of Birth: 15/11/61

EDUCATION

1986	Ph.D. in Physics University of British Columbia Thesis: Numerical Techniques for Radiative Problems in General Relativity Supervisor: Prof. W.G. Unruh, Physics
1982	M.Sc. in Physics University of British Columbia Thesis: A Study of Numerical Techniques for the Initial Value Problem in General Relativity Supervisor: Prof. W.G. Unruh, Physics

AWARDS and HONORS

2003	Fellow, American Physical Society
2003	Canadian Association of Physicists-Centre de Rechérches Prize in Theoretical and Mathematical Physics
2002	Young Explorers Prize; Canadian Institute for Advanced Research (for Canada's top 20 researchers in science & engineering aged 40 and under)
2002	Doctor of Science (*honoris causa*), Brandon University
2001	Rutherford Memorial Medal—Physics; Royal Society of Canada
1997	Xanthopolous International Award for Research in Gravitational Physics
1986–1988	Natural Sciences and Engineering Research Council of Canada Postdoctoral Fellowship
1984–1985	H.R. MacMillan Family Fellowship
1980–1984	Natural Sciences and Engineering Research Council of Canada Postgraduate Scholarship
1980–1981	John and Catherine Robbins Graduate Scholarship
1980	Brandon University Gold Medal—B.Sc.
1980	Brandon University Silver Medals—Computer Science and Physics
1979	Brandon University: Governor–General's Gold Medal

PROFESSIONAL AND TEACHING EXPERIENCE

2010–	Affiliate Member, Perimeter Institute for Theoretical Physics, Waterloo, ON
2007–2008	Senior Research Scientist, Max Planck Insitüt für Gravitationsphysik, Albert-Einstein-Institut (MPI-AEI), Golm, Germany
2006–2013	Member, Editorial Board, *General Relativity and Gravitation*
2004	Long Term Visitor, Max Planck Insitüt für Gravitationsphysik, Albert-Einstein-Institut (MPI-AEI), Golm, Germany
2003	Member and Coordinator, Kavli Inst. for Theor. Phys., Santa Barbara, CA Gravitational Interaction of Compact Objects Program
2000	Member and Coordinator, Inst. for Theor. Phys., Santa Barbara, CA Colliding Black-Holes Mini-Program
1999–	PROFESSOR of Physics & Astronomy The University of British Columbia, Vancouver BC
1999–	FELLOW, Canadian Institute for Advanced Research Cosmology & Gravity Program
1999	Member, Institute for Theoretical Physics, Santa Barbara, CA Classical & Quantum Physics Of Strong Gravitational Fields Program
1999–2002	Council, *Gravitation Topical Group of the American Physical Society*
1999–2003	Adjunct Professor of Physics, The University of Texas, Austin TX
1996-2003	Member, Editorial Board, *Classical and Quantum Gravity*
1995-1999	Associate Professor of Physics, The University of Texas, Austin TX
1994, 2010	Invited Participant, Erwin Schrodinger Institute, Vienna, Austria Workshop on Mathematical Relativity
1992–1995	Research Associate, The University of Texas, Austin TX
1991–1992	Postdoctoral Fellow, The University of Texas, Austin, TX
1990	Scarborough College, University of Toronto, Toronto, Ontario Lecturer, 1st year Astronomy
1988–1991	Postdoctoral Fellow, CITA, Toronto, ON
1988	Member, Institute for Theoretical Physics, Santa Barbara, CA Computational Fluid Dynamics Program
1986–1988	Research Associate, Cornell University, Ithaca NY
1982–1983	Programming Consultant, Computing Centre, University of British Columbia, Vancouver, British Columbia
1980–1985	University of British Columbia, Vancouver, British Columbia Teaching Assistant, Physics
1980	Summer Student at Flight Research Laboratory, National Research Council, Ottawa, Ontario
1979	Summer Student at Marine Dynamics and Ship Laboratory, National Research Council, Ottawa, Ontario
1978–1979	Brandon University, Brandon, Manitoba Teaching Assistant, Mathematics

GRANTS AWARDED

2013-	NSERC Discovery Grant, Numerical Relativity, $33,000
2006-2013	NSERC Discovery Grant, Numerical Relativity, $70,900 p.a.
2000–	CIFAR Cosmology & Gravity Program HQP support: 2000–2003: $20,000 p.a.; 2004:$35,000, 2005: $103,000, 2006: $103,000, 2007–2011: $40,000, 2012– $30,000
2000	CFI Continuing New Opps Grant, Parallel Computing Facility
1999–2005	NSERC Operating Grant, *Problems in Computational Relativity*, $61,000 p.a.
1999–2005	NSERC MFA for HPC (TASP Program, co-I)
1998–2000	NSF PHY9800722, *Binary Black Holes & Gravitational Radiation* (co-PI)
1998–2000	Texas ARP Grant, *Computational Black Hole Physics*
1997–1999	NSF PHY9722068, *Problems in Numerical Relativity*
1996	UT Austin Faculty Summer Research Assignment
1993–1998	NSF PHY9318152 (ARPA supplemented), *Black Hole Binaries: Coalescence & Gravitational Radiation* (co-PI)

POSTDOCTORAL FELLOWS (sole or co-supervisor)

2010–2013	Dr. Evgeny Sorkin (CITA National Fellow, UBC)
2005–2007	Dr. Evgeny Sorkin (UBC)
2003–2007	Dr. Martin Snajdr (CITA National Fellow, UBC)
2000–2002	Dr. Luis Lehner (CITA National Fellow, PIMS Fellow, UBC)
2000–2002	Dr. Hugo Villegas (UBC)
1998–2000	Dr. Luis Lehner (UT Austin)
1997–1998	Dr. Robert Marsa (UT Austin)
1996–1998	Dr. Eric Hirschmann (UT Austin)
1996–1998	Dr. Mijan Huq (UT Austin)
1994–1995	Dr. Scott Klasky (UT Austin)

PhD STUDENTS (sole or primary supervisor)

2013–	Graham Reid (NSERC CGSD Fellow, UBC)
2010–	Arman Akbarian (University Graduate Fellow, UBC)
2008–	Silvestre Aguilar (UBC)
2008–	Daoyan Wang (UBC)
2004–2013	Benjamin Gutierrez (UBC UGF, UBC)
2004–2011	Andrew Jason Penner (UBC UGF, UBC)
2002–2010	Bruno Mundim (UBC)
2001–2004	Inaki Olabarrieta (UBC, Basque Country Fellow)
1999–2005	Roman Petryk (NSERC Fellow, UBC)
1999–2002	Frans Pretorius (NSERC Fellow, Killam Fellow, UBC)
1998–2004	Chi-Wai (Kevin) Lai (UBC)
1997–2003	Scott Noble (UT Austin)
1996–2002	Jason Ventrella (UT Austin)
1996–2000	Ethan Honda (UT Austin)
1996–2000	Scott Hawley (UT Austin)
1995–1999	David Neilsen (UT Austin)
1996–1998	Dae-il Choi (UT Austin)

PhD STUDENTS (sole or primary supervisor)

1995–1998	Steven Liebling (UT Austin)
1992–1995	Robert L. Marsa (UT Austin)
1992–1995	Reid Guenther (UT Austin, unofficial supervisor)
1991–1994	Scott Klasky (UT Austin, unofficial supervisor)

MSc STUDENTS

2013–2014	Daniel Sheinbaum (transferred to Mathematics, UBC)
2012–2013	Graham Reid
2008–2010	Arman Akbarian
2005–2008	Aaryn Tonita (NSERC Fellow, UBC)
2003–2005	Roland Stevenson (UBC UGF, UBC)
2003–2006	Pal Sandhu (UBC [withdrew])
2001–2003	Bruno Rousseau (NSERC Fellow, UBC)
1998–2001	Inaki Olabarrieta (UBC)
1994–1995	Steven Liebling (UT Austin)

UNDERGRADUATE STUDENTS

2014–	Branden Fung (UBC, Physics Hons Thesis)
2014–	Eric Furugori (UBC, Physics Hons Thesis)
2009–2010	David Shinkaruk (UBC, Physics Hons Thesis)
2008–2009	Andrew Inwood (UBC, Physics Hons Thesis)
2006–2007	Tyler Dodds (UBC, Physics Hons Thesis)
2005–2006	John Homenuke (UBC, Physics Hons Thesis)
2005–2006	Jaskeerat Makkar (UBC, Physics Hons Thesis [did not complete])
2004–2005	Aaron Froese (UBC, Physics Hons Thesis)
2004–2005	Brian Martin (UBC, Physics Hons Thesis, co-supervised with Ian Affleck)
2002–2002	David Tsang (UBC, Applied Science Sr Project)
2002–2002	Wade Cherrington (UBC, Applied Science Sr Project)
2001–2002	Palbinder Sandhu (UBC, Physics Hons Thesis)
1999–2000	Brock Wilson (UBC, Physics Hons Thesis)

JOURNALS REFEREED

American Journal of Physics
Astrophysical Journal
Astronomy and Astrophysics
Physical Review Letters
Physical Review D
Classical and Quantum Gravity
General Relativity and Gravitation
Journal of Computational Physics
Nuclear Physics B

INVITED TALKS AND SEMINARS

1. "Critical Behaviour in Massless Scalar Field Collapse", Invited talk at Numerical Relativity Workshop, Southampton, UK, Dec. 1991

2. "Critical Behaviour in Scalar Field Collapse", Applied Mathematics Colloquium, Princeton University, Princeton, NJ, May 1993

3. "Adaptive Mesh-refinement and the Discovery of Critical Behaviour in Gravitational Collapse", Invited talk at Physics Computing '93, Albuquerque, NM, June 1993

4. "Universality and Critical Behaviour in Gravitational Collapse of Scalar Fields", Invited talk at: Deterministic Chaos In General Relativity: NATO Advanced Research Workshop: Kananaskis Park, Alberta, July 1993

5. "Critical Phenomena in Black Hole Physics", Physics Colloquium, University of Texas at Austin, Austin, TX, Sep. 1993

6. "Critical Phenomena in Gravitational Collapse", Center for Gravitational Physics and Geometry, Penn. State University, State College, PA, Oct. 1993

7. "Critical Phenomena in Gravitational Collapse", ITP/Physics Field Theory and Relativity Seminar, UCSB, Santa Barbara, CA, Nov. 1993

8. "Critical Phenomena in Gravitational Collapse", Theoretical Physics Seminar, University of British Columbia, Vancouver, BC, Nov. 1993

9. "Critical Phenomena in Black Hole Physics", Computational Physics Seminar Series, IBM Watson Research Center, White Plains, NY, Dec. 1993

10. "Critical Phenomena in Gravitational Collapse", Physics Colloquium, Southern Methodist University, Dallas, TX, Apr. 1994

11. "Critical Phenomena in Gravitational Collapse", Canadian Institute for Theoretical Astrophysics, Toronto, ON, May 1994

12. "Critical Phenomena in Gravitational Collapse", Relativity and Astrophysics Seminar, Queens' University, Kingston, ON, May 1994

13. "Critical Phenomena in Black Hole Physics", Invited talk at XI International Congress on Mathematical Physics, Paris, France, July 1994

14. "Critical Phenomena in Gravitational Collapse", Invited talk at the ESI Conference on Mathematical Relativity, Vienna, Austria, July 1994

15. "Numerical Relativity in the 90's", Invited talk at the 7th Marcel Grossmann Conference, Stanford, CA, July 1994

16. "Critical Phenomena in Gravitational Collapse", Physics Colloquium, Syracuse University, Syracuse NY, Oct. 1994

17. "Making Small Black Holes", Physics Colloquium, University of Texas at Austin, Austin, TX, Nov. 1994

18. "Making Small Black Holes", Physics Seminar, Dept. of Physics & Astronomy, Univ. of Pittsburgh, Pittsburgh, PA, Mar. 1995

19. "Making Small Black Holes", Seminar, MPI Gravitationspyhysik, Potsdam, FDR, June 1995

20. "Critical Phenomena in Gravitational Collapse", Invited talk at the 1996 Joint APS/AAPT Meeting, Indianapolis IN, May 1996

21. "Making Small Black Holes: Critical Phenomena in Gravitational Collapse", Invited talk APCTP Inauguration Conference, Seoul, Korea, June 1996

22. "The Binary Black Hole Grand Challenge Project", Invited talk at 12th Kingston Meeting on Theoretical Astrophysics, Halifax NS, Oct. 1996 "Numerical Relativity", Invited plenary talk at 18th TX Symp. on Relativistic Astrophysics, Chicago IL, Dec. 1996

23. "Binary Black Hole Grand Challenge Update", Invited talk Aspen Workshop on Gravitational Waves, Aspen CO, Feb. 1997

24. "Making Arbitrarily Small Black Holes", Invited talk at IMA Workshop on Structured AMR Grid Methods, Minneapolis MN, Mar. 1997

25. "Critical Phenomena In Black Hole Formation", Invited talk at the 1997 Joint APS/AAPT Meeting, Washington DC, Apr. 1997

26. "The Binary Black Hole Grand Challenge Project", Invited talk at Physics via High Performance Computing, Albuquerque NM, May 1997

27. "Critical Phenomena In Black Hole Physics", Dept. of Physics and Astronomy Colloquium, Northwestern University, Evanston IL, May 1997

28. "Critical Phenomena In Black Hole Physics", Enrico Fermi Institute Seminar, University of Chicago, Chicago IL, May 1997

29. "Critical Phenomena In Gravitational Collapse", Invited talk at Black Holes: Theory and Mathematical Aspects, Banff AB, June 1997

30. "Critical Phenomena In Gravitational Collapse", Invited talk at 1997 Canadian Association of Physicists Congress, Calgary AB, June 1997

31. "Critical Phenomena In Gravitational Collapse", Invited talk at CCGRRA 7, The University of Calgary, Calgary AB, June 1997

32. "The (Unstable) Threshold of Black Hole Formation", Invited plenary talk at GRG 15, Pune, India, December 1997

33. "Singularities at the Threshold of Black Hole Formation", Invited talk at Workshop on Singularities, Santa Fe NM, January 1998

34. "Making Small Black Holes: Critical Phenomena in Gravitational Collapse", Special Seminar, University of British Columbia, Vancouver, BC, April 1998

35. "Making Small Black Holes: Critical Phenomena in Gravitational Collapse", Institute for Field Theory, University of Florida, Gainesville FL, April 1998

36. "Making Small Black Holes: Critical Phenomena in Gravitational Collapse", Dept. of Physics Colloquium, University of Utah, Salt Lake City UT, May 1998

37. "Recent Developments in Black Hole Critical Phenomena", Theory Group Seminar, Dept. of Physics, UT Austin, Austin TX, Oct 1998

38. "Black Hole Critical Phenomena", Director's Seminar, ITP, Santa Barbara CA, Feb 1999

39. "Recent Developments in Numerical Relativity", Caltech Physics Colloquium, Pasadena CA, Feb 1999

40. "Making Small Black Holes: Critical Phenomena in Gravitational Collapse", Dept. of Physics Colloquium, Univ. of Maryland, College Park, MD, Mar 1999

41. "Recent Developments in Black Hole Critical Phenomena", Seminar, ITP, Santa Barbara CA, April 1999

42. "Recent Developments in Black Hole Critical Phenomena", CIAR 1999 Gravity & Cosmology Mtg, Banff AB, May 1999

43. "Critical Behaviour in Gravitational Collapse",, 1999 Invited talk at Yukawa International Seminar, Kyoto Japan, June 1999

44. "Critical Phenomena in Gravitational Collapse", Invited plenary talk, 9th Midwest Geometry Conference, Columbia MO, November 1999

45. "Of Black Hole and Beowulfs", Scientific Computation & Visualization Seminar, UBC, Vancouver BC, November 1999

46. "Of Black Hole and Beowulfs", Dept. of Applied Mathematics Seminar, Univ. of.Washington, Seattle WA, December 1999

47. "Critical Phenomena in Gravitational Collapse", Dept. of Physics Colloquium, Univ. of Chicago, Chicago IL, February 2000

48. "The UBC `vn` Beowulf Cluster", CIAR Gravity & Cosmology Mtg, Banff AB, February 2000

49. "The UBC `vn` Beowulf Cluster", TRIUMF Farming Mini-Workshop, Vancouver BC, February 2000

50. "Critical Phenomena in Gravitational Collapse", High Energy Theory Seminar, SFU, Vancouver BC, February 2000

51. "Evolution of Dynamical Black Hole Spacetimes Using Excision Techniques", Kingston 2000, The CITA Reunion Meeting, Toronto ON, August 2000

52. "The UBC `vn` Beowulf Cluster", Vancouver Linux User's Group Meeting. Burnaby BC, September 2000

53. "Recent Developments in Numerical Relativity", Physics Colloquium, McMaster University, Hamilton ON, November 2000

54. "Recent Developments in Numerical Relativity", Physics and Astronomy Colloquium, University of Waterloo, Waterloo ON, November 2000

55. "Critical Phenomena in Gravitational Collapse", Institute of Applied Mathematics Colloquium, UBC, Vancouver BC, January 2001

56. "Recent Developments in Numerical Relativity", Physics and Astronomy Colloquium, University of Victoria, Victoria BC, February 2001

57. "Black Holes Without Black Holes: Excision Techniques in Numerical Relativity", CIAR Cosmology & Gravity Annual Meeting, Banff AB, February 2001

58. "A New Code for Axisymmetric Numerical Relativity", Black Holes III, Kananaskis AB, May 2001

59. "Simulating the Dynamics of Spacetime", Workshop on Modeling and Scientific Computation, Fredericton NB, September 2001

60. "Simulating the Dynamics of Spacetime: Successes and Challenges", Physics and Astronomy Colloquium, University of Calgary, Calgary AB, October 2001

61. "Simulating the Dynamics of Spacetime: Successes and Challenges", Physics Colloquium, University of Toronto, Toronto ON, January 2002

62. "Simulating the Dynamics of Spacetime: Successes and Challenges", Institute for Theoretical Physics Colloquium, University of California, Santa Barbara CA, March 2002

63. "Recent Developments in Black Hole Critical Phenomena", Invited talk at 2002 April APS Meeting, Albuquerque NM, April 2002

64. "Fundamental Issues of Numerical Relativity", Invited talk at IAM Numerical Relativity Workshop, Minneapolis MN, June 2002

65. "Recent Developments in Critical Collapse", Classical and Quantum Gravity Conference, King's College, London UK, September 2002

66. "Simulating the Dynamics of Spacetime: Successes and Challenges", Physics Colloquium, Brandeis University, Waltham MA, February 2003

67. "Critical Phenomena in Gravitational Collapse", Mathematics Colloquium, University of Miami, Coral Gables FL, April 2003

68. "Critical Phenomena in Gravitational Collapse", Plenary talk at the 2003 Canadian Association of Physicists Congress, University of PEI, Charlottetown PEI, June 2003

69. "Recent Developments in Black Hole Critical Phenomena", Workshop on the Cauchy Problem for the Einstein Equations, Université de Montréal, Montreal QC, September 2003

70. "The State of the Art in Numerical Relativity", Plenary Lectures, Miami Waves 2004: Conference on Geometric Analysis, Nonlinear Wave Equations and General Relativity, University of Miami, Coral Gables FL, January 2004

71. "Parameterized Black Hole Formation as a Phase Transition", Theory Seminar, Dept. of Physics and Astronomy, UBC, Vancouver BC, March 2004

72. "Simulating Black Hole Spacetimes: Successes and Challenges", Seminar in Contemporary Topics in Physics, University of Northern British Columbia, Prince George BC, April 2004

73. "Recent Developments in Black Hole Critical Phenomena", Relativistic Astrophysics Seminar, University of Florida, Gainesville FL, April 2004

74. "Critical Phenomena in Gravitational Collapse", Partielle Differentialgleichung en und Gravitationphysik Universitat Potsdam, Institut fur Mathematik, MPI-AEI Seminar, Golm, Germany, May 2004

75. "Relative Stability of Black Hole Threshold Solutions and the Dynamical Fate of the $n = 1$ Bartnik-McKinnon Solution", MPI-AEI Seminar, Golm, Germany, May 2004

76. "Relative Stability of Black Hole Threshold Solutions and the Dynamical Fate of the $n = 1$ Bartnik-McKinnon Solution", Gravity Seminar, Dept. of Physics & Astronomy, UBC, Vancouver BC, June 2004

77. "Numerical Relativity: Is There Light at the End of the Tunnel?", CITA/CIAR Focus Group on Candian HPC Astrophysics, CITA, Univ. of Toronto, Toronto ON, January 2005

78. "Numerical Relativity: Status Report", CIAR Cosmology and Gravity Program, Annual Meeting, Mt Tremblant QC, March 2005

79. "Numerical Relativity: Recent Trends" APCTP Numerical Approaches to General Relativity Kick-Off Workshop Seoul National University, Seoul, Korea, March 2005

80. "The Einstein/Intel Connection", Colloquium, Dept. of Physics, Baylor University, Waco TX, April 2005

81. "Survey of Numerical Approximations of Black-Hole Spacetimes", BIRS Workshop on Numerical Relativity, Banff AB, April 2005

82. "Critical Phenomena in Gravitational Collapse", Grand Challenge Problems in Relativsitic Astrophysics, IPAM, UCLA, Los Angeles CA, May 2005

83. "Special Relativistic Analogues of Black Strings", BIRS Workshop on the Dark Side of Extra Dimensions, Banff AB, May 2005

84. "Recent Developments in the 2-Body Problem in Numerical Relativity", Black Holes V: Theory and Mathematical Aspects, Banff AB, May 2005

85. "Numerical Relativity in the World Year of Physics", Canadian Association of Physicists Congress 2005, Vancouver BC, June 2005

86. "Numerical Relativity and Numerical Analysis", Progam on Global Problems in Mathematical Relativity, Isaac Newton Institute, Cambridge UK, July 2005

87. "Recent Developments in Black Hole Critical Phenomena", New Directions in Numerical Relativity, Univ. of Southampton, Southampton UK, July 2005

88. "Numerical Relativity in The World Year of Physics", Joint Mathematics, Applied Mathematics, Astrophysics Colloquium, Princeton University, Princeton NJ, December 2005

89. "Status of Numerical Relativity", Mathematical Aspects of General Relativity Workshop, Mathematiches Forschunginstitut Oberwolfach, Oberwolfach, Germany, January 2006

90. "Numerical Relativity in The World Year of Physics", Physics Colloquium, Brigham Young University, Provo UT, January 2006

91. "The Impact of Unruh and Wald on Numerical Relativity", Unruh & Wald Fest, University of British Columbia, Vancouver BC, August 2006

92. "Black Hole Physics and Mathematics Through Scientific Computing", Scientific Computing Seminar, Simon Fraser University, Burnaby BC, March 2007

93. "Numerical Relativity: Recent Progress and Future Prospects", On Einstein's Path: A Mini Symposium for Peter C Aichelburg, University of Vienna, Vienna Austria, November 2007

94. "Using Multigrid to Solve Time Dependent PDEs", SFB Videoseminar, MPI-AEI, Golm Germany, February 2008

95. "Black Hole Production at the LHC?", Annual Mtg of the DPG (German Physical Society), Freiburg, Germany, March 2008

96. "Critical Phenomena in Gravitational Collapse", IEM, CISC, Madrid, Spain, April 2008

97. "Critical Phenomena in Gravitational Collapse", Institute of Theoretical Physics, Universidad Autonoma, Madrid, Spain, April 2008

98. "Angular Momentum Barriers and Critical Collapse", Gravity in Flat Space Conference, ZARM, Bremen, Germany, April 2008

99. "Critical Phenomena in Gravitational Collapse", Physics and Astronomy Colloquium, Friedrich-Schiller-Universität, Jena, Germany, April 2008

100. "Relative Stability of Black Hole Threshold Solutions and the Dynamical Fate of the $n = 1$ Bartnik-McKinnon Solution", Theoretisch-Physikaliches Insitutsseminar, Friedrich-Schiller-Universität, Jena, Germany, April 2008

101. "Black Hole Production at the LHC?", MPI-AEI Colloquium, Golm, Germany, April 2008

102. "Black Hole Production at the LHC?", AMSI Workshop on Mathematical Relativity, AMSI, Melbourne, Australia, July 2008

103. "Numerical Relativity: Past Successes and Future Challenges", Mathematics Colloquium, Monash Univ., Melbourne, Australia, July 2008

104. "Relative Stability of Black Hole Threshold Solutions and the Dynamical Fate of the $n = 1$ Bartnik-McKinnon Solution", Mathematics Seminar, Monash Univ., Melbourne, Australia, July 2008

105. "Critical Phenomena in Gravitational Collapse", Black Holes Workshop, CERN, Geneva, Switzerland, September 2008

106. "High Energy Self-Gravitating Collisions of 'Scalar Solitons", Black Holes Workshop, CERN, Geneva, Switzerland, September 2008

107. "Relative Stability of Critical Solutions in Gravitational Collapse ", Black Holes VII: Theory and Mathematical Aspects, Banff, AB, May 2009

108. "Ultra Relativistic Particle Collisions", Quantitative Studies of Nonlinear Wave Phenomena, ESI, Vienna, Austria, Jan 2010

109. Lecture Series at Perimeter Scholar's Institute, Introduction to Numerical Relativity, Perimeter Institute, Waterloo ON, Mar 2010 – 3 lectures + labs

110. Lecture Series at II Amazonian School on Quantum Field Theory and Applications: Introduction to Numerical Field Theory, Belem, Brazil, April 2010 – 3 lectures

111. "Critical Phenomena in The Einstein-Vlasov System", SCAPDE, UCSD, San Diego, May 2012 University of Heidelberg, June 2012

112. "Ultra Relativistic Particle Collisions", University of Heidelberg, Heidelberg, DE, June 2012

113. "Critical Collapse of Yang-Mills Fields", HET Seminar, University of Michigan, Ann Arbor, MI, March 2013

PUBLICATIONS (refereed)

1. Choptuik, M. and W.G. Unruh, "An Introduction to the Multi-Grid Method for Numerical Relativists", *Gen. Rel. Grav.,* **18** (1986), 813–843

2. Choptuik, M. W., "Consistency of Finite Difference Solutions of Einstein's Equations", *Phys. Rev.,* **D44** (1991), 3124–3135

3. Choptuik, M. W., "Critical Behaviour in Massless Scalar Field Collapse", in *Approaches to Numerical Relativity*, R. d'Inverno, ed. (1992) 202–222

4. Choptuik, M. W., D. Goldwirth and T. Piran, "A Direct Comparison of Two Codes in Numerical Relativity", *Class. & Quant. Gravity,* **9** (1992), 721–750

5. Choptuik, M. W., "Universality and Scaling in Gravitational Collapse of a Massless Scalar Field", *Phys. Rev. Lett.,* **70** (1993), 9–12

6. Cook, G. B., M. W. Choptuik, M. R. Dubal, S. Klasky, R. A. Matzner and S. Oliveira, "Three-dimensional Initial Data for the Collision of Two Black Holes", *Phys. Rev.,* **D47** (1993), 1471–1490

7. Choptuik, M. W., T. Chmaj and P. Bizon, "Critical Behaviour in Gravitational Collapse of a Yang-Mills Field", *Phys. Rev. Lett.,* **77** (1996), 424–427

8. Liebling, S. L. and M. W. Choptuik, "Black Hole Criticality in the Brans-Dicke Model", *Phys. Rev. Lett.,* **77** (1996), 1424–1427

9. Marsa, R. L. and M. W. Choptuik, "Black Hole–Scalar Field Interactions in Spherical Symmetry", *Phys. Rev.,* **D54** (1996), 4929–4943

10. Choptuik, M. W., E. W. Hirschmann and S.L. Liebling, "Instability of an Approximate Black Hole", *Phys. Rev.,* **D55** (1997), 6014–6018

11. Abrahams, A. M. *et al*, "Gravitational Wave Extraction and Outer Boundary Conditions by Perturbative Matching", *Phys. Rev. Lett.,* **80** (1998), 1812–1815

12. Cook, G. B. *et al*, "Boosted Three-Dimensional Black Hole Evolutions with Singularity Excision", *Phys. Rev. Lett.,* **80** (1998), 2512-2516

13. Gomez, R. *et al*, "Stable Characteristic Evolution of Generic Three-dimensional Single Black Hole Space-times", *Phys. Rev. Lett.,* **80** (1998), 3915-3918

14. Neilsen, D. W. and M. W. Choptuik, "Critical Phenomena in Perfect Fluids", *Class. & Quant. Gravity,* **17** (2000), 761–782

15. Choptuik, M. W., E. W. Hirschmann and R. L. Marsa, "New Critical Behavior in Einstein-Yang-Mills Collapse", *Phys. Rev.,* **D60** 124011 (1999), (9 pp.)

16. Neilsen, D. W. and M. W. Choptuik, "Ultrarelativistic Fluid Dynamics", *Class. & Quant. Gravity,* **17** (2000), 733–759

17. Hawley, S. H. and M. W. Choptuik, "Boson Stars Driven to the Brink of Black Hole Formation", *Phys. Rev.*, **D62** 104024 (2000), (19 pp.)

18. Pretorius, F. and M. W. Choptuik, "Gravitational Collapse in (2+1)-dimensional ADS Space-time", *Phys Rev.*, **D62** 124012 (2000), (15 pp.)

19. Olabarrieta, I. and M. W. Choptuik, "Critical Phenomena at the Threshold of Black Hole Formation for Collisionless Matter in Spherical Symmetry", *Phys Rev.*, **D65** 024007 (2002), (10 pp.)

20. Honda, E. P. and M. W. Choptuik, "Fine Structure of Oscillons in the Spherically Symmetric ϕ^4 Klein-Gordon Model", *Phys Rev.*, **D65** 084037 (2002), (12 pp.)

21. Huq, M. P., M. W. Choptuik and R. A. Matzner, "Locating Boosted Kerr and Schwarzschild Apparent Horizons", *Phys Rev.*, **D66** 084024 (2002), (15 pp.)

22. Brady, P. R., M. W. Choptuik, C. Gundlach and D. W. Neilsen, "Black Hole Threshold Solutions in Stiff Fluid Collapse", *Class. & Quant. Grav.*, **19**, (2002), 6359-6376

23. Hawley, S. H. and M. W. Choptuik, "Numerical Evidence for 'Multi-scalar Stars"', *Phys Rev.*, **D67** 024010 (2003), (5 pp.)

24. Choptuik, M. W., E. W. Hircshmann, S. L. Liebling and F. Pretorius, "An Axisymmetric Collapse Code", *Class. & Quant. Grav.*, **20**, (2003), 1857-1878

25. Choptuik, M. W., L. Lehner, I. Olabarrieta, R. Petryk, F. Pretorius and H. Villegas, "Towards the Final Fate of an Unstable Black String", *Phys Rev.*, **D68** 044001 (2003), (11 pp.)

26. Choptuik, M. W., E. W. Hircshmann, S. L. Liebling and F. Pretorius, "Critical Collapse of the Massless Scalar Field in Axisymmetry", *Phys Rev.*, **D68** 044007 (2003), (9 pp.)

27. Ventrella, Jason F. and Matthew W. Choptuik, "Critical Phenomena in the Einstein-Massless-Dirac System", *Phys Rev.*, **D68** 044020 (2003), (10 pp.)

28. Choptuik, M. W., E. W. Hircshmann, S. L. Liebling and F. Pretorius, "Critical Collapse of a Complex Scalar Field With Angular Momentum", *Phys Rev. Lett.*, **93:**131101 (2004), (4 pp.)

29. Pretorius, F. and M.W. Choptuik, "Adaptive Mesh Refinement for Coupled Elliptic Hyperbolic Systems", *J. Comp. Phys.*, **218** (2006), (246-274)

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