THE UNIVERSITY OF BRITISH COLUMBIA

Curriculum Vitae for Faculty Members

Date: April 15, 2014 **Initials**:

1. **SURNAME**: Choptuik **FIRST NAME** : Matthew
MIDDLE NAME(S): William

2. **DEPARTMENT/SCHOOL:** Physics and Astronomy

3. **FACULTY**: Science

4. **PRESENT RANK:** Professor **SINCE**:July 1, 1999

5. **POST-SECONDARY EDUCATION**

University or Institution	Degree	Subject Area	Dates
Brandon University	B Sc	Physics/Computer Sc.	1978-1980
University of British Columbia	M Sc	Physics	1980-1982
University of British Columbia	Ph D	Physics	1982-1986

Special Professional Qualifications

6. **EMPLOYMENT RECORD**

(a) Prior to coming to UBC

University, Company or Organization	Rank or Title	Dates
University of Texas at Austin	Adjunct Professor	1999-present
University of Texas at Austin	Associate Professor	1995-1999
University of Texas at Austin	Research Associate	1992-1995
University of Texas at Austin	Postdoctoral Fellow	1991-1992
University of Toronto (CITA)	Postdoctoral Fellow	1988-1991
Scarborough College (U of Toronto)	Lecturer	1990-1990
Cornell University	Research Associate	1986-1988
UBC Computing Center	Consultant	1982-1983
UBC Physics Department	Teaching Assistant	1980-1985
NRC, Flight Research Laboratory	Summer Student	1980-1980
NRC, Marine Dynamics Laboratory	Summer Student	1979-1979
Brandon University Math. Dept.	Teaching Assistant	1978-1979

Other academic and/or research memberships (active only)

Senior Fellow, Canadian Institute for Advanced Research Program in Cosmology and Gravitation
Member, Institute for Applied Mathematics (UBC)
Member, Scientific Computing and Applied & Industrial Mathematics (UBC)

(b) At UBC

Rank or Title	Dates
Professor	1999-present
Fellow, CIAR Cosmology and Gravity Program	1999-present

(c) Date of granting of tenure at U.B.C.: July 1, 1999

7. LEAVES OF ABSENCE

University, Company or Organization at which Leave was taken	Type of Leave	Dates
The University of Texas at Austin	Dean's Leave	1999
The University of British Columbia	Study Leave	07/2007-06/2008
The University of British Columbia	Medical Leave	05/2010-09/2011

8. TEACHING

(a) Areas of special interest and accomplishments

Computational Physics, Numerical Relativity, Scientific Computing, High Performance Computation

(b) Courses Taught at UBC

Session	Course	Scheduled	Class	Hours Taught			
	Number	Hours	Size	Lectures	Tutorials	Labs	Other
Fall 2000	PHYS 410	3	22	3			
Fall 2001	PHYS 410	3	31	3			
Fall 2002	PHYS 401	3	21	3			
Fall 2003	PHYS 410	3	26	3			
Fall 2004	PHYS 410	3	36	3			
Spring 2005	PHYS 555B	3	6	0			
Fall 2005	PHYS 410	3	27	3			
Spring 2006	PHYS 555B	3	11	0			
Fall 2006	PHYS 410	3	27	3			
Spring 2007	PHYS 555B	3	11	3			
Spring 2009	PHYS 170	3	230	3			
Fall 2009	PHYS 210	3	33	3	4		
Fall 2012	PHYS219	2		2	8		
Fall 2012	PHYS210	2		2	8		

NOTES:

1. PHYS 555B Spring 2005 was Numerical Relativity. Lecturing was done almost entirely by Drs Bryan Kelleher and Martin Snajdr, but I defined and organized the course, and provided Kelleher with detailed notes for his portion of the lecturing.
2. PHYS 555B Spring 2006 was Parallel Computing with Mesh and Particle Methods. Lecturing was done entirely by Martin Snajdr, but I defined the course and content.
3. PHYS 555B Spring 2007 was Advanced Computational Physics with Mesh and Particle Methods

Supervised Honour's Thesis of Brock Wilson, (April 2000)
Supervised APSC 479 Thesis of Wade Cherrington and David Tsang, (January 2002)
Supervised Honour's Thesis of Palbinder Sandhu, (April 2002)
Supervised Honour's Thesis of Aaron Froese (April 2005)
Co-supervised (with I. Affleck) Honour's Thesis of Brian Martin (April 2005)
Supervised Honour's Thesis of John Homenuke (April 2006)
Supervised Honour's Thesis of Tyler Dodds (April 2007)
Supervised Honour's Thesis of Andrew Inwood (April 2009)
Supervising Honour's Thesis of David Shinkaruk (April 2010)

(c) Graduate Students Supervised

Student Name	Program Type	Year		Principal	Co-Supervisor(s)
		Start	Finish	Supervisor	
Scott Klasky	Ph D	1991	1994	Richard A Matzner	Matthew W Choptuik
Reid Guenther	Ph D	1992	1995	Richard A Matzner	Matthew W Choptuik
Robert L Marsa	Ph D	1992	1995	Matthew W Choptuik	
Steven L Liebling	M Sc/Ph D	1994	1998	Matthew W Choptuik	
Dae-Il Choi	Ph D	1996	1998	Matthew W Choptuik	
David W Neilsen	Ph D	1995	1999	Matthew W Choptuik	
Scott Hawley	Ph D	1996	2000	Matthew W Choptuik	Richard A Matzner
Ethan Honda	Ph D	1996	2000	Matthew W Choptuik	Philip J Morrison
Jason Ventrella	Ph D	1996	2002	Matthew W Choptuik	Philip J Morrison
Scott Noble	Ph D	1997	2003	Matthew W Choptuik	Philip J Morrison
Ignacio Olabarrietta *	M Sc/Ph D	1998	2004	Matthew W Choptuik	
Chi-Wai (Kevin) Lai	Ph D	1998	2004	Matthew W Choptuik	
Frans Pretorius **	Ph D	1999	2002	Matthew W Choptuik	
Roman Petryk **	Ph D	1999	2005	Matthew W Choptuik	
Bruno Rousseau **	M Sc	2001	2003	Matthew W Choptuik	
Bruno Mundim	Ph D	2002	2010	Matthew W Choptuik	
Palbinder Sandhu	M Sc	2003	Withdrew	Matthew W Choptuik	
Roland Stevenson *	M Sc	2003	2005	Matthew W Choptuik	
Andrew Penner *	Ph D	2004	2011	Matthew W Choptuik	
Benjamin Gutierrez *	Ph D	2005	2013	Matthew W Choptuik	
Aaryn Tonita **	M Sc	2005	2008	Matthew W Choptuik	
Daoyan Wang	Ph D	2008		Matthew W Choptuik	
Silvestre Aguilar	Ph D	2008		Matthew W Choptuik	
Arman Akbarian	M Sc/Ph D	2008		Matthew W Choptuik	

Key: ** denotes NSERC winner, * UGF or equivalent

Visiting Graduate Supervision
1. Luis D'Afonseca, (Brasil), April 2002-April 2003
2. Ji-Haeng Huh (Seoul National University, Korea), July 2005-August 2005

3. Jin-Ho Kim (Seoul National University, Korea), July 2005-August 2005, July 2006-August 2006, January 2007-
4. Changeon Oh (Hanyang University, Korea), July 2006-August 2006

(d) Continuing Education Activities

(e) Visiting Lecturer (indicate university/organization and dates)

(f) Other

Postdoctoral Fellows Supervised

Evgeny Sorkin, UBC 2005-2007
Martin Snajdr, UBC, 2003-2007
Luis Lehner, UBC, 2000-2002 (currently Sloan Fellow and Assistant Professor at Louisiana State Univ)
Hugo Villegas, UBC, 2000-2002 (currently working in the private sector in Mexico)
Luis Lehner, Center for Relativity, UT Austin, 1998-2000
Eric Hirschman, Center for Relativity, UT Austin, 1996-1998 (currently Associate Professor of Physics, Brigham Young Univ)
Mijan Huq, Center for Relativity, UT Austin, 1996-1998 (currently working with JP Morgan, NY, NY)
Scott Klasky, Center for Relativity, UT Austin, 1994-1995 (currently Senior Research Scientist, Princeton Plasma Physics Lab.)

Undergraduate Students Supervised

David Shinkaruk, UBC 2009-2010 (Honour's Physics Thesis)
Andrew Inwood, UBC 2008-2009 (Honour's Physics Thesis)
Tyler Dodds, UBC 2006-2007 (Honour's Physics Thesis)
John Homenuke, UBC 2005-06 (Honour's Physics Thesis)
Andrew Wilson, UBC, 2005, 2006 (Undergraduate Research Asst, NSERC URA)
Robert Hocking, UBC 2005 (Undergraduate Research Asst)
Aaron Froese, UBC, 2004-05 (Honour's Physics Thesis)
Brian Martin, UBC, 2004-05 (Honour's Physics Thesis)
John Homenuke, UBC, 2004 (Undergraduate Research Asst.)
Sina Tootoonian, UBC, 2002 (Undergraduate Research Asst.)
Markus Rumpfkiel, UBC, 2002 (Visiting Student)
Palbinder Sandhu, UBC, 2001-2002 (Honour's Physics Thesis & Undergraduate Research Asst.)
Hanna Routsalainen, UBC, 2000 (Undergraduate Research Asst.)
Brock Wilson, UBC, 1999-2000 (Honour's Physics Thesis)

9. SCHOLARLY AND PROFESSIONAL ACTIVITIES

(a) Areas of special interest and accomplishments

Computational Relativity, General Relativity, Black Hole Physics, Computational Physics, Partial Differential Equations, Numerical Analysis, High Performance Computation, Parallel Computation, Scientific Software Development, Scientific Visualization

(b) Research or equivalent grants (indicate under COMP whether grants were obtained competitively (C) or non-competitively (NC))

Agency	Subject	COMP	$Per Yr	Year	PI	Co-Investigator(s)
NSERC	Numerical Relativity	C	33,000	13-	MW Choptuik	
CIFAR	Cosmology & Gravity PGM	NC	30,000	12-	MW Choptuik	
CIFAR	Cosmology & Gravity PGM	NC	80,000	07-12	MW Choptuik	
CIAR	Cosmology & Gravity PGM	NC	100,000	06-07	MW Choptuik	
NSERC	Numerical Relativity	C	70,900	06-13	MW Choptuik	
CIAR	Cosmology & Gravity PGM	NC	150,000	05-06	MW Choptuik	
CFI	Parallel Computing	C	648,000	05-06	MW Choptuik	7 others
CIAR	Cosmology & Gravity Pgm	NC	145,000	04-05	MW Choptuik	
CIAR	Cosmology & Gravity Pgm	NC	65,000	03-04	MW Choptuik	
CIAR	Cosmology & Gravity Pgm	NC	65,000	02-03	MW Choptuik	
CIAR	Cosmology & Gravity Pgm	NC	134,000	01-02	MW Choptuik	
CIAR	Cosmology & Gravity Pgm	NC	129,000	00-01	MW Choptuik	
CIAR	Cosmology & Gravity Pgm	NC	100,000	99-00	MW Choptuik	
CFI	Parallel Computing	C	648,000	2000	MW Choptuik	7 others
NSERC	Computational Relativity	C	61,000	99-05	MW Choptuik	
NSF	Numerical Relativity	C	77,000 US	98-00	RA Matzner	M.W. Choptuik
TARP	Numerical Relativity	C	40,000 US	98-00	MW Choptuik	
NSF	Numerical Relativity	C	82,000 US	97-00	MW Choptuik	
NSF	Numerical Relativity	C	725,000 US	93-99	RA Matzner	14 others

(d) Invited Presentations

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

Critical Behaviour in Scalar Field Collapse,
Relativity Seminar, University of Utah,
Salt Lake City, UT, April 1993

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

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

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

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

Critical Phenomena in Gravitational Collapse,

Center for Gravitational Physics and Geometry, Penn. State University,
State College, PA, Oct. 1993

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

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

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

Making Very Small Black Holes on a Cray Y-MP,
Physics Colloquium, Austin College,
Sherman, TX, Apr. 1994

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

Critical Phenomena in Gravitational Collapse,
Seminar, Canadian Institute for Theoretical Astrophysics,
Toronto, ON, May 1994

Critical Phenomena in Gravitational Collapse,
Relativity and Astrophysics Seminar, Queen's University,
Kingston, ON, May 1994

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

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

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

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

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

Making Small Black Holes,
Physics Seminar, Univ. of Pittsburgh,
Pittsburgh, PA, Mar. 1995

Making Small Black Holes

Seminar, MPI Gravitationspyhysik,
Potsdam, FDR, June 1995

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

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

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

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

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

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

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

Critical Phenomena In Black Hole Physics,
Dept. of Physics & Astronomy Colloq., Northwestern University,
Evanston IL, May 1997

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

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

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

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

The (Unstable) Threshold of Black Hole Formation,

Invited plenary talk at GRG 15,
Pune, India, December 1997

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

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

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

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

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

Black Hole Critical Phenomena,
Director's Seminar, Institute for Theoretical Physics,
Santa Barbara CA, Feb 1999

Recent Developments in Numerical Relativity,
Physics Colloquium, California Institute of Technology,
Pasadena CA, Feb 1999

Making Small Black Holes: Critical Phenomena in Gravitational Collapse,
Physics Colloquium, University of Maryland,
College Park, MD, Mar 1999

Recent Developments in Black Hole Critical Phenomena,
Seminar, Institute for Theoretical Physics,
Santa Barbara CA, April 1999

Recent Developments in Black Hole Critical Phenomena,
CIAR 1999 Gravity & Cosmology Annual Meeting,
Banff AB, May 1999

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

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

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

Of Black Hole and Beowulfs

Dept. of Applied Mathematics Seminar, Univ. of Washington,
Seattle WA, December 1999

Critical Phenomena in Gravitational Collapse,
Physics Colloquium, University of Chicago,
Chicago IL, February 2000

The UBC vn Beowulf Cluster,
CIAR Cosmology & Gravity Program Annual Meeting,
Banff AB, February 2000

The UBC vn Beowulf Cluster,
TRIUMF Farming Mini-Workshop,
Vancouver BC, February 2000

Critical Phenomena in Gravitational Collapse,
High Energy Theory Seminar, Simon Fraser University,
Vancouver BC, February 2000

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

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

Recent Developments in Numerical Relativity
Physics and Astronomy Colloquim
McMaster University, Hamilton ON, November 2000

Recent Developments in Numerical Relativity
Physics Colloquium
University of Waterloo, Waterloo ON, November 2000

Critical Phenomena in Gravitational Collapse
Institute of Applied Mathematics Colloquium
University of British Columbia, January 2001

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

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

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

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

Simulating the Dynamics of Spacetime: Successes and Challenges

Physics and Astronomy Colloquium
University of Calgary, Calgary AB, October 2001

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

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

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

Fundamental Issues of Numerical Relativity
IAM Numerical Relativity Workshop
Minneapolis MN, June 2002

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

Present and Future HPC Facilities for UBC Researchers
Scientific Computing and Visualization Seminar
University of British Columbia, November 2002

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

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

Critical Phenomena in Gravitational Collapse
Plenary talk at 2003 Canadian Association of Physicists Congress,
Charlottetown, PEI, June 2003

The State of the Art in Numerical Relativity
Plenary Lectures at Miami Waves 2004
University of Miami, Coral Gables FL, January 2004

Parameterized Black Hole Formation as a Phase Transition
Theory Seminar, Department of Physics & Astronomy,
University of British Columbia, Vancouver BC, March 2004

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

Recent Developments in Black Hole Critical Phenomena
Relativistic Astrophysics Seminar
University of Florida, Gainseville FL, April 2004

Critical Phenomena in Gravitational Collapse

Partielle Diferrentialgleichungen und Gravitationsphysik
Universitat Potsdam, Institut fur Mathematik
Max-Planck Institut fur Gravitationsphysik, Golm, Germany, May 2004

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

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

Numerical Relativity: Is There Light at the End of the Tunnel?
CITA/CIAR Focus Group on Canadian HPC Astrophysics
CITA/U of Toronto, Toronto ON, January 2005

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

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

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

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

Critical Phenomena in Gravitational Collapse
Grand Challenge Problems in Relativistic Astrophysics
IPAM, UCLA, Los Angeles CA, May 2005

Special Relativistic Analogues of Black Strings??
BIRS Workshop on The Dark Side of Extra Dimensions
Banff AB, May 2005

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

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

Numerical Relativity and Numerical Analysis
Global Problems in Mathematical Relativity
Isaac Newton Institute, Cambridge UK, July 2005

Recent Developments in Black Hole Critical Phenomena
New Directions in Numerical Relativity
University of Southampton, Southampton UK, July 2005

Standing on the Shoulders of Giants Redux: Numerical Relativity in The World Year of Physics

Joint Mathematics / Applied Mathematics / Astrophysics Colloquium
Princeton University, Princeton NJ, December 2005

Status of Numerical Relativity
Mathematical Aspects of General Relativity (Workshop)
Mathematiches Forschungsinstitut Oberwolfach
Oberwolfach Germany, January 2006

Numerical Relativity in the World Year of Physics
Dept of Physics Colloquium
Brigham Young University
Provo UT, January 2006

Spring School in Numerical Gravitation and Astrophysics
Seoul and Daejon Korea
March 2006
(Gave 6 lectures and ran several additional tutorial sessions in this two week school designed to train Korean graduate students and their supervisors in numerical relativity)

The Impact of Unruh and Wald in Numerical Relativity
Unruh and Wald Fest
University of British Columbia
Vancouver, BC, August 2006

Black Hole Physics and Mathematics through Scientific Computing
Scientific Computing Seminar
Simon Fraser University
Burnaby, BC, March 2007

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

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

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

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

Critical Phenomena in Gravitational Collapse
Institute of Theoretical Physics
Autonomous University, Madrid, Spain, April 2008

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

Black Hole Production at the LHC?
AMSI Workshop on Mathematical Relativity

AMSI, Melbourne, Australia, July 2008

Numerical Relativity: Past Successes and Future Challenges
Mathematics Colloquium
Monash University, Melbourne, Australia, July 2008

Relative Stability of Black Hole Threshold Solutions
Mathematics Seminar
Monash University, Melbourne Australia, July 2008

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

High Energy Self-Gravitating Collisions of 'Scalar Solitons'
Black HolesWorkshop
CERN, Geneva, Switzerland, September 2008

XXX and YYY
Black Holes XX
Banff, AB, May 20XX

(e) Other Presentations

Numerical Relativity: Computational Requirements and Challenges
CIAR Cosmology and Gravity Program, Annual Meeting
Banff Center, Banff AB, March 2004

(g) Conference Participation (Organizer, Keynote Speaker, etc.)

Chief Organizer,
ITP Miniprogram on Colliding Black Holes, UCSB, Santa Barbara, CA
January 2000

Co-Organizer,
CIAR Gravity and Cosmology Program, Banff AB,
February 2000

Chair, Gravitational Radiation - Theory and Numerical Relativity
Contributed Session of the April APS Meeting, Long Beach CA
April 2000

Member, Scientific Organizing Committee,
International Society on General Relativity & Gravitation
16th International Conference, Durban, South Africa
July 2001

Co-Organizer,
KITP Program on Gravitational Interaction of Compact Objects, UCSB, Santa Barbara, CA
May-July 2003

Co-Organizer and Chair of Organizing Committee,
PSU/PITP Graduate Summer School on General Relativistic Hydrodynamics, UBC, Vancouver, BC
July 2003

Member, Scientific Organizing Committee,

International Society on General Relativity & Gravitation
17th International Conference, Dublin, Ireland
July 2004

Co-Organizer
Numerical Relativity Workshop, Banff International Research Station
April 2005

Member, Organizing Committee
5th Annual BC.NET Conference, Vancouver BC
April 2005

Organizer
UBC/CIAR/PITP Meeting on Parallel Adaptive Fluid Dynamics (FLAMR)
Vancouver BC
April 2005

Co-organizer
UBC/U Chicago/CIAR/PITP/CITA 60th Birthday Conference for RM Wald and WG Unruh
Vancouver BC
August 2006

Member
Local Organizing Committee
XXIV Texas Symposium on Relativistic Astrophysics
Vancouver BC
December 2008

10. SERVICE TO THE UNIVERSITY

(a) Memberships on committees, including offices held and date

Summary of Committee on Initial Appointments (Search activity) 1999-2005

1. Full participation on successful and fully open searches (CAPS indicate Chair of search cmte)
    a. Mona Berciu
    b. Jeremy Heyl
    c. Marcel Franz
    d. David Jones
    e. Kirk Madison
    f. Scott Oser
    g. JOERG ROTTLER
    h. Vesna Sossi
    i. Ingrid Stairs
    j. Ludowic Van Waerbeke
    k. Fei Zhou
2. Full participation on successful but not fully open searches
    a. Johannes Barth
    b. Andrea Damascelli
    c. Joshua Folk
    d. Brett Gladman
    e. George Sawatzky
    f. Moshe Shapiro
    g. Mark Van Raamsdonk
3. Full participation on UNSUCCESSFUL searches
    a. Oscar Painter (AMO)

b. NSERC UFA 200?
c. Joint TRIUMF/UBC Theory Head
d. Vidal (Quantum Information)
e. Prokofiev (Condensed Matter Theory)

UBC WestGrid (2) PI
2005

Department of Physics and Astronomy
Committee on Initial Appointments
2000-2004 (see summary of activities above)

Department of Physics and Astronomy
Computer Committee
2000-2005

Department of Physics and Astronomy
Committee on Promotion, Retention and Tenure
2000-2003, 2004-2005

Department of Physics and Astronomy
Merit Committee
2002

WestGrid Procurement Committee
2002-2005

Institute for Applied Mathematics
Head Search Committee
2003

Department of Physics and Astronomy
Chair of Graduate Awards Committee
2004-2005

Department of Physics and Astronomy
Chair, Computational Physics Faculty Search Subcommittee
2004-2005

Department of Physics and Astronomy
Chair, Graduate Recruiting
2008-

(b) Other service, including dates

Chair, Examining Committee,
Oral Examination of Benjamin Tsou
April 2000

Chair, Examining Committee
Oral Examination of Eugene Cheung
September 2000

Chair, Examining Committee
Oral Examination of Douglas James
September 2001

University Examiner
Oral Examination of Jaret Heise
December 2001

Chair, Examining Committee
Oral Examination of Mihail Cocos
March 2003

University Examiner
Oral Examination of Kirk Buckley
December 2003

University Examiner
Oral Examination of Glen Pugh
November 2004

University Examiner
Oral Examination of Mark Holmes
April 2005

University Examiner
Oral Examination of Joseph Lo
July 2008

Chair, Examining Committee
Oral Examination of Matthew Rogers
August 2008

Chair, Examining Committee
Oral Examination of Sandra Merchant
December 2009

Chair Examining Committee
Oral Examination of Andrew Morrison
March 2012

Chair, Examining Committee
Oral Examination of Marek Majewski
April 2013

University Examiner
Oral Examination of Humaira Kamal
July 2013

Chair, Examining Committee
Oral Examination of Cihan Okay
April 2014

11. SERVICE TO THE COMMUNITY

(a) Memberships on scholarly societies, including offices held and dates

Member, American Physical Society
1993-present

Elected Member-at-large of the Executive Council of the

Topical Group on Gravitation of the American Physical Society
1999-2002

Stood for election for councilor at large for Division of Computational Physics, American Physical Society, 2006
(Was urged to run by Division executive, on recommendation of several Division members)

Stood for election for Vice Chair of Topical Group on Gravitation, American Physical Society

(b) Memberships on other societies, including offices held and dates

(c) Memberships on scholarly committees, including offices held and dates

Member, APS Metropolis Award Selection Committee
2003-2005

Member, Canadian Association of Physicists / Centre de Researche Mathematiques
Selection Committee for Prize in Theoretical and Mathematical Physics
2003-2005

(d) Memberships on other committees, including offices held and dates

UBC Representative to C3.CA (Canadian Supercomputing Consortium
1999-2005

Member, TASP Committee of C3.CA
1999-2005

Chair, NSERC Grant Selection Committee, Space Science and Astronomy (GSC 17)
2004-2005

Member, NSERC Grant Selection Committee, Space Science and Astronomy (GSC 17)
2002-2004

Member, WestGrid Resource Allocation Committee
2003-2007

Member, NSF Selection Panel, ITR Competition IT4SCT, May 2004, Washington DC

(e) Editorships (list journal and dates)

Member, Editorial Board
General Relativity and Gravitation
2006-2013

Member, Editorial Board
Classical and Quantum Gravity
1996-2003

(f) Reviewer (journal, agency, etc. including dates)

Physical Review
1991-present

Physical Review Letters

1993-present

Classical and Quantum Gravity
1991-present

Journal of Computational Physics
1995-present

General Relativity and Gravitation
1993-present

International Journal of Theoretical Physics
1998-present

Astrophysical Journal
1998-present

Astronomy and Astrophysics
2002-present

Physics Reports
2002

National Science Foundation (US)
1991-present

Natural Sciences and Engineering Research Council
1991-present

Australian Research Council
1995-present

Austrian Research Council
1998-present

Chilean Research Council (***)
2010

(g) External examiner (indicate universities and dates)

University of Calgary
December 1999

University of Alberta
August 2000

University of Alberta
August 2003

(h) Consultant (indicate organization and dates)

(i) Other service to the community

12. AWARDS AND DISTINCTIONS

(a) Awards for Teaching (indicate name of award, awarding organizations, date)

(b) Awards for Scholarship (indicate name of award, awarding organizations, date)

Governor General's Gold Medal (for first two years of a bachelor's program),
Brandon University,
1979

Silver Medal, Computer Science,
Brandon University,
1980

Silver Medal, Physics,
Brandon University,
1980

John and Catherine Robbins Graduate Scholarship,
Brandon University,
1980-1981

Postgraduate Scholarship,
Natural Sciences and Engineering Research Council of Canada,
1980-1984

UBC Graduate Fellowship,
H.R. MacMillan Family,
1984-1985

Postdoctoral Fellowship,
Natural Sciences and Engineering Research Council of Canada,
1986-1988

Xanthopolous International Award for Research in Gravitational Physics,
Foundation for Research and Technology-Hellas,
1997

Rutherford Memorial Medal-Physics
Royal Society of Canada
2001

Doctor of Science (honoris causa),
Brandon University,
May 2002

Young Explorers Prize
Canadian Institute for Advanced Research
June 2002

CAP-CRM Prize in Theoretical and Mathematical Physics
Canadian Association of Physicists-Centre de Rechérches Mathematiques
2003

Fellow, American Physical Society

2003

(c) Awards for Service (indicate name of award, awarding organizations, date)

Residence Director's Award (for fostering community spirit in residence)
Brandon University,
1980

THE UNIVERSITY OF BRITISH COLUMBIA

Publications Record

SURNAME: CHOPTUIK **FIRST NAME**: Matthew **Initials**:
MIDDLE NAME(S):William **Date**: May 2,
2003

1. REFEREED PUBLICATIONS

(a) Journals

Choptuik, Matthew and W.G. Unruh,
An Introduction to the Multi-Grid Method for Numerical Relativists, (*)
General Relativity and Gravitation, 18, 813-843 (1986)

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

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

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

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, 1471-1490 (1993)

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

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

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

Choptuik, M.W., E.W. Hirschmann and S.L. Liebling,

Instability of an Approximate Black Hole,
Phys. Rev., D55, 6014-6018, (1997)

Abrahams, A.M. et al (44 authors including M.W. Choptuik),
Gravitational Wave Extraction and Outer Boundary Conditions by Perturbative Matching,
Phys. Rev. Lett., 80, 1812-1815 (1998)

Cook, G.B. et al (45 authors including M.W. Choptuik),
Boosted Three-Dimensional Black Hole Evolutions with Singularity Excision,
Phys. Rev. Lett., 80, 2512-2516 (1998)

Gomez, R. et al (44 authors including M.W. Choptuik),
Stable Characteristic Evolution of Generic Three-dimensional Single Black Hole Space-times,
Phys. Rev. Lett., 80 3915-3918 (1998)

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

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

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

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

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

Olabarrietta, I. And M.W. Choptuik
Critical Phenomena at the Threshold of Black Hole Formation for Collisionless Matter in Spherical Symmetry
Phys. Rev., D65 024007 (10 pages), (2002)

Honda, Ethan P. and Matthew W. Choptuik, (*)
Fine Structure of Oscillons in the Spherically Symmetric phi^4 Klein-Gordon Model
Phys. Rev., D65 0110065 (12 pages), (2002)

Huq, Mijan F., Matthew W. Choptuik and Richard A. Matzner
Locating Boosted Kerr and Schwarzschild Apparent Horizons
Phys. Rev., D66 084024 (15 pages), (2002)

Brady, Patrick R., Matthew W. Choptuik, Carsten Gundlach and David W. Neilsen
Black Hole Threshold Solutions in Stiff Fluid Collapse
Class. Quant. Grav, 19, 6359-6376, (2002)

Hawley, Scott H. and Matthew W. Choptuik
Numerical Evidence for “Multi-scalar Stars”
Phys. Rev. D67 024010 (5 pages), (2003)

Choptuik, Matthew W., Eric W. Hirschmann, Steven L. Liebling and Frans Pretorius

An Axisymmetric Collapse Code
Class. Quant. Grav. 20, 1857-1878, (2003)

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

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, (11 pages), (2003)

Choptuik, Matthew W., Eric W. Hirschmann, Steven L. Liebling and Frans Pretorius
Critical Collapse of the Massless Scalar Field in Axisymmetry
Phys. Rev. D68 044007, (9 pages), (2003)

Choptuik, Matthew W., Eric W. Hirschmann, Steven L. Liebling and Frans Pretorius
Critical Collapse of a Complex Scalar Field with Angular Momentum
Phys. Rev. Lett. 93:131101, (4 pages), (2004)

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

Olabarrieta, I., J. Ventrella, M.W. Choptuik and W.G. Unruh
Critical Behaviour in the Gravitational Collapse of a Scalar Field with Angular Momentum
Phys. Rev. D76:124014, (2007) (10 pages)

Noble, S.C. and M.W. Choptuik
Type-II Critical Phenomena of Neutron Star Collapse
Phys. Rev. D78: 064909, (2008) (22 pages)

Sorkin, E. and Choptuik, M.W.
Generalized Harmonic Formulation in Spherical Symmetry
Gen. Rel. Grav, 42, (2010) 1239-1286

Choptuik, M.W. and F. Pretorius
Ultra Relativistic Particle Collisions
Phys. Rev. Lett, 104:11101 (2010), (4 pages)

Kim, J., Kim, H.I., Choptuik, M.W. and Lee, H.M.
Axially Symmetric Pseudo-Newtonian hydrodynamics Code
MNRAS, 424, (2012), 830-842

(b) Conference Proceedings

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

(c) Other

2. <u>NON-REFEREED PUBLICATIONS</u>

(a) Journals

Matthew W. Choptuik,
Critical Behaviour in Gravitational Collapse
Prog. in Theor. Phys. Suppl., 136, 353-365, (1999)

(b) Conference Proceedings

Choptuik, Matthew,
Experiences With an Adaptive Mesh Refinement Algorithm in Numerical Relativity,
in, Frontiers in Numerical Relativity, Evans, Finn & Hobill, eds. 206-221 (1989)

Choptuik, M.W.,
Critical Behaviour in Scalar Field Collapse,
in, Deterministic Chaos in General Relativity,
Hobill, Burd & Coley, eds., 155-175 (1994)

Choptuik, M.W.,
Critical Phenomena in Gravitational Collapse,
in, Proc. of the XI Congress of Mathematical Physics,
D. Iagolnitzer, ed. 599-605 (1995)

Choptuik, M. W.,
The Binary Black Hole Grand Challenge Project,
in, Proc. of the 12th `Kingston meeting' on Theoretical Astrophysics,
Clarke & West, eds., 305-313, (1997)

Choptuik, M.W., E.W. Hirschmann and S.L Liebling
Dynamical Instability and Critical Behaviour of van Putten's "Approximate Black Hole"
in, Proceedings of the 8th Marcel Grossmann Meeting on Recent Developments in
Theoretical and Experiemental General Relativity (1997)

Choptuik, M. W.,
Numerical Relativity,
to appear in Proc. of the 18th Texas Symposium on Relativistic Astrophysics,
Olinto, Frieman & Schramm, eds., (1998)

Choptuik, M. W.,
Making Arbitrarily Small Black Holes: Experiences with AMR in Numerical Relativity,
Structured Adaptive Mesh Refinement Grid Methods,
S. B. Baden et al, eds., 153--164 (1998)

Choptuik, M. W.,
The (Unstable) Threshold of Black Hole Formation
in, Gravitation and Relativity: At the turn of the Millenium,
N. Dadhich and J. Narlikar, eds. 67-86 (1998)

Hawley, S.H. And M.W. Choptuik
Critical Phenomena Associated with Boson Stars,
Proceedings. of the 20th Texas Symposium on Relativistic Astrophysics (2001)

(c) Other

3. BOOKS

(a) Authored

(b) Edited

(c) Chapters

Choptuik, M.W.,
Computational Methods in General Relativity --- The Theory
Elsevier Encyclopedia of Mathematical Physics, (2005)

Choptuik, M. W.,
Gravitational Collapse,
1996 Yearbook of Science and Technology, McGraw-Hill, (1995)

4. PATENTS

5. SPECIAL COPYRIGHTS

6. ARTISTIC WORKS, PERFORMANCES, DESIGNS

7. OTHER WORKS

8. WORK SUBMITTED (including publisher and date of submission)

9. WORK IN PROGRESS (including degree of completion)