

The Niels Bohr Institute
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ACADEMIA

Post-Doctoral Fellowships

>> Post-Doc at University of Bern under Prof. Matthias Blau (Jan 2013-Oct 2014)

Description: my research will focus on holographic dualities between gravitational black hole solutions and effective descriptions of viscous fluids and elastic solids. The main objective will be to continue pursuing the connection between deformations of black hole geometries and the physics of elastic materials. It will be partly developed at CERN.

Ongoing Degrees

>> PhD in History & Philosophy of Science, Jan 2011-present (envisioned)

Description: this project started out with the idea of compiling a series of interviews to different theoretical physicists, about their views on the current state of the field and with particular focus on the quest for quantum gravity, and publish it in book form. However due to the amount of research needed and of a quite different nature I will propose a long review article on the history of quantum gravity together with the book as a PhD thesis. I have so far interviewed 25 scientists around the world, such as David Gross, Franck Wilczek, Gerard 't Hooft, Roger Penrose, Steven Weinberg, Juan Maldacena, Cumrun Vafa, among others. The book is meant for both a general and academic audience and has the secondary intention of showing that there are alternative ways of financing fundamental research that can give something back to society, as all the turnover from the book sales will be allocated for attributing a PhD scholarship.

Education

>> PhD in Theoretical Physics, 2009-2012

University of Copenhagen (Denmark) | The Niels Bohr Institute
Thesis: '***ElectroElasticity from Gravity***'
Supervisors: Prof. Niels Obers & Prof. Troels Harmark

>> Part III, Certificate of Advanced Study in Mathematics, 2007-2008

University of Cambridge (England) | DAMTP
Essay: '***Numerical Analysis of the Cyclic Model***'
Supervisors: Prof. Neil Turok & Dr. Daniel Wesley

>> Erasmus exchange program, 2005-2006

Trinity College Dublin (Ireland) | Department of Physics
Thesis: '***Finite Element Analysis of Foam Drainage***'
Supervisors: Prof. Denis Weire & Dr. Eric Janiaud

>> Degree in Engineering Physics, 2002-2007

University of Aveiro (Portugal) | Department of Physics
Thesis: '***Enhancement of Electromagnetic fields at rough Dielectric-Metal Interfaces***'
Supervisor: Prof. Sushil Mendiratta

Scientific Residences

- >> Tata Institute for Fundamental Research (India), Nov 2010-Mar 2011
Host: Shiraz Minwalla

Awards/Grants

- >> Erasmus Grant, University of Aveiro, 2005
- >> Best Engineering Physics student award, University of Aveiro, 2007
- >> Cambridge Trust Bursary, University of Cambridge, 2007
- >> FCT PhD Scholarship, Portuguese Ministry of Science, 2008-present
- >> Financial support from NBI for organizing '**Science & Cocktails**', 2010-present
- >> Grant from NBI for compiling the book '**Conversations on Quantum Gravity**', 2011

Publications

- >> J.Armas & T.Harmark, '**Uniqueness Theorem for Black Hole Space-times with Multiple Disconnected Horizons**', JHEP, Vol. 1005, 2010
- >> J.Armas, '**Maximal Analytic Extension and Hidden Symmetries of Dipole Black Rings**', Class. Quantum Grav. 28 (2011) 235014.
- >> J.Armas & N.A.Obers, '**Blackfolds in (Anti)-de Sitter backgrounds**', Phys. Rev. D83, 2011
- >> J.Armas, J.Camps, T.Harmark & N.A.Obers, '**The Young Modulus of Black Strings and the Fine Structure of Blackfolds**', JHEP 1202 (2012) 110
- >> J.Armas, P.Caputa & T.Harmark, '**Domain Structure of Space-Times with a Cosmological Constant**', Phys.Rev. D85 (2012) 084019
- >> J.Armas, T.Harmark, N.A.Obers, M.Orselli & A.V.Pedersen, '**Thermal Giant Gravitons**', arXiv:1207.2789, accepted for publication in JHEP
- >> J.Armas, J.Gath & N.A.Obers, '**Black Branes as Piezoelectrics**', arXiv:1209.2127, accepted for publication in PRL.
- >> J.Armas & N.A.Obers, '**Relativistic Elasticity of Stationary Fluid Branes**', ariv:1209.2127

Public Outreach | Science Communication

- >> Founder and main Organizer of **Science & Cocktails**, Copenhagen, Mar 2010-present

Description: Science & Cocktails is a series of public lectures intertwined with media art and liquid nitrogen cocktails. It is held at Byens Lys in Copenhagen and is financed by the Niels Bohr Institute. Its aim is to reach a large audience with different backgrounds and spread scientific knowledge in an entertaining way. All lectures are recorded and broadcasted on Copenhagen's local television as well as uploaded onto the internet. Names such as Holger Bech Nielsen, Niels Obers, Eske Willerslev, Niels Harrit, Stuart Hameroff, Rupert Sheldrake and Michael Shermer are part of its program.

Talks/Seminars

- >> Talk, Nordic String Meeting, Stockholm University, '**Uniqueness Theorem for Black Hole Space-times with Multiple Disconnected Horizons**', Nov 2009
- >> Talk, Conference on black holes in higher-dimensional gravity, Imperial College, '**Rod Structure of Asymptotically (A)dS Space-Times**', Oct 2010
- >> Seminar, TIFR & HRI, '**Blackfolds**', Feb 2011
- >> Nordic Meeting, NBI, '**The Young Modulus of Black Strings**', Nov 2011
- >> Models of Gravity, Bremen University, '**Elasticity of Black Strings**', Mar 2012
- >> Bits, Branes and Black Holes, KITP, '**Black Branes as Elastic materials**', Apr 2012
- >> The Holographic Way, Nordita, '**(Electro)elasticity from Gravity**', Nov 2012

Informal Talks

- >> Journal Club , '*Maximal Analytic Extension of the Black Ring*', NBI, May 2009
- >> Journal Club , '*Dipole Corrections to the Blackfold Approach*', NBI, May 2011
- >> Journal Club , '*Superfluids from Gravity*', NBI, Jun 2012

Conferences

- >> The 22nd Nordic String Meeting on Strings, Fields and Branes, Stockholm, 2008
- >> The 23rd Nordic String Meeting on Strings, Fields and Branes, NBI, 2009
- >> The 25th Nordic String Meeting on Strings, Fields and Branes, Stockholm, 2010
- >> Black Holes in higher-dimensional gravity, Imperial College, 2010
- >> Strings 2011, Uppsala, 2011
- >> Models of Gravity, Bremen University, 2012

Schools/Workshops

- >> Amsterdam String Theory PhD School, University of Amsterdam, Nov 2008
- >> String Theory & Supergravity PhD School, CERN, Feb 2009
- >> Spring School on Superstring theory and related topics, ICTP, Mar 2009
- >> NBI Elite PhD School on higher-dimensional Black Holes, NBI, Oct 2009
- >> NBI Elite PhD School on Integrability, NBI, Oct 2010
- >> String Theory workshop, Benasque, Jul 2011
- >> Bits, Branes and Black Holes, KITP, Apr 2012
- >> The Holographic Way, Nordita, Nov 2012

Teaching Assistant

- >> String Theory, Niels Bohr Institute, 2009
- >> General Relativity, Niels Bohr Institute, 2010 & 2011

Research Assistant

- >> Trinity College Dublin, Jun-Aug 2006
Project: '*Finite Element Analysis of 2D Foam Drainage*'
Supervisors: Dr. Stefan Hutzler & Dr. Eric Janiaud

Service

- >> Member of Darwin's College music committee, Cambridge, 2007-2008
- >> Co-designer of the HET group website, NBI, 2009
- >> Member of the Junior Faculty committee, NBI, 2010-present

Description: committee formed with the aim of watching out for the rights of PhD students and Post-Docs at NBI and to organize meetings, talk and events with the purpose of making the integration process for newcomers easier.

CULTURAL/BUSINESS MANAGEMENT

Cultural Initiatives

- >> Vice-President of the Cultural Association **Fazendo**, Azores, Oct 2008 - May 2012
- >> Director of the Cultural & Scientific Newspaper **Fazendo**, Azores, Oct 2008-May 2012
- >> Co-founder of **Think Tank Fazendo**, Azores, 2010
- >> Co-manager of **Byens Lys**, Copenhagen, Mar 2011-present

Description: Underground venue in the heart of Christiania. Some of the events consist on regular movie screenings, art festivals, film festivals, concerts, cabarets and lectures. To run this venue is my main role as a citizen of the community of Christiania.

Business Initiatives

- >> Co-manager & Co-owner of **Huset Ved Kongens Have**, Copenhagen, Aug 2009-Jul 2010

Description: **Huset Ved Kongens Have** (HVKH) was a cocktail bar and art gallery located at the center of Copenhagen. It served old school cocktails and hosted dinner and release parties.

ART/MUSIC PROJECTS

Installation Art

- >> Member of the Artist Collective '**Live Art Installations**', CPH, May 2012 - present
- >> Member of the Collective '**Fabrikken**', permanent residence in Christiania, since 2011
- >> **Urbanbotics**, Copenhagen, Jun 2012

Description: the aim of this project was to create a set of DMX controlled underwater lamps that could float on the water surface or submerge into the bottom of the harbor (5 meters). The 7 lamps were attached to a plastic glowing screen and an air compressor could pump air into the screen, expelling the water and make them raise to the surface. The installation ran for three consecutive days and was controlled by an arduino and relay switches controlling the pumps. The lamps reacted to the sound of the city and audience via a hidden microphone and mimic the language of sea creatures through their developing light patterns.

- >> **The Battle of Copenhagen**, Copenhagen, Aug 2012

Description: this project consisted on a large scale event with 60 dancers, 100 double bass players and sailing ships lasting for 1.30h at Copenhagen's harbor. My role was to develop a system capable of transmitting wireless signals to the lamps on platforms floating on the water where the dancers were performing. The lamps were running on battery power. This required the development of an easy-going Max/MSP library that could deal with sending signals to multiple XBee's and arduinos on each platform. The light design and light patterns were adapted to each platform with its individual theme.

Music

- >> **O Experimentar Na M'Imcomoda**, Aug 2010-present

Description: traditional azorean music...more or less. Two records released. My role here is to synthesize new sounds and patterns using languages such as Max/MSP, Matlab and also Arduinos.

- >> **Babudjah**, Oct 2009-present

Description: this is a music project created in collaboration with the artist/musician Pedro Lucas. We have created the soundtrack for a documentary on marine life edited by the department of biology of Azores' university which will be broadcasted on Azoren TV.

Literature

>> The Set of All Man, Apr-Oct 2009

Description: this is a literature book written in portuguese in a style inspired by the portuguese writer Gonalo M. Tavares. It is a critic to logic and new age and it is mainly based on my study on the philosophy of Wittgenstein and on the neuroscience research of Ant3nio Dam3sio. It is part of a trilogy which is now in preparation. It was awarded the second prize in the Azorean contest **LabJovem**, 2009. It is part of the catalog of the international agent **Ella Sher** and has been represented at Frankfurt's International Book Fair (2011). It will be published soon.

>> Publications (selected)

- > J.Armas, **'Through the eyes of Oliver Sacks'**, Fazendo n39, 2009
- > J.Armas, **'On Brief Notes on Science'**, Fazendo n315, 2009
- > J.Armas, **'Impressionism and Biology'**, Fazendo n328-29, 2009
- > J.Armas, **'Cultural and Creative Industries'**, Fazendo n342, 2010
- > J.Armas, **'Think Tanks'**, Fazendo n344, 2010
- > J.Armas, **'Fazendo's Megalomania'**, Fazendo n365, 2011

Short films

>> Art work for Science & Cocktails

Description: this project consists of a series of **short films/teasers** aimed as didactic material for science communication. It has been developed in connection with the series Science & Cocktails.

>> Appearance on **'Portugueses pelo Mundo'**, Copenhagen, 2012