Maciek Wielgus

Black Hole Initiative Postdoctoral Fellow, Harvard University
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EDUCATION

Warsaw University of Technology **Sep 2016**
Ph.D. in Machine Design and Maintanance: Photonic Engineering
Dissertation: Adaptive decomposition and analytic signal concept in the interferometric fringe pattern analysis

Warsaw University of Technology **Dec 2010**
M.S. in Robotics and Automatic Control: Photonic Engineering (*interferometric pattern analysis*)

Warsaw University **Sep 2010**
B.S. in Mathematics: Numerical Analysis (*partial differential equations*)

PROFESSIONAL EXPERIENCE

Black Hole Initiative Postdoctoral Fellow **2017 – present**
Harvard University, Cambridge, USA (*mentor: Shep Doeleman*)

Confronting Theories of Accretion with Observations, KITP Program **Jan 2017 – Mar 2017**
Visiting Scholar, UCSB, Santa Barbara, USA

Postdoctoral researcher at Nicolaus Copernicus Astronomical Center **2016 – 2017**
Polish Academy of Sciences, Warsaw, Poland (*mentors: Wlodek Kluźniak, Marek Abramowicz*)

Internship at Center for Astrophysics | Harvard & Smithsonian **Oct 2015 – Dec 2015**
Cambridge, USA (*mentors: Ramesh Narayan, Olek Sądowski*)

Designing industrial image processing algorithms at KSM Vision **2014 – 2015**
Warsaw, Poland

Internship at National Center of the Industrial Technology **Oct 2013 – Nov 2013**
Buenos Aires, Argentina (*mentors: Guillermo Kaufmann, Alejandro Frederico*)

Internship at Center for Astrophysics | Harvard & Smithsonian **Jun 2013 – Aug 2013**
Cambridge, USA (*mentors: Ramesh Narayan, Olek Sądowski*)

Internship at the College of Charleston **May 2013 – Jun 2013**
Charleston, USA (*mentor: Chris Fragile*)

Engineer at the Institute of Electron Technology **2011 – 2013**
Warsaw, Poland

RESEARCH INTERESTS

- astrophysics of compact objects
- general relativity
- very long baseline radio interferometry
- applied signal and image processing
- physics of accretion
- magnetohydrodynamics
- developing EHT data reduction and inspection pipeline

AWARDS

Inaugural Winner of the EHT Early Career Award (individual) **2020**

Albert Einstein medal (EHT collaboration) **2020**

Bruno Rossi Prize for a contribution to High Energy Astrophysics (EHT collaboration) **2020**

Breakthrough Prize in Fundamental Physics (EHT collaboration)	**2020**
Smithsonian Institute American Ingenuity Award (EHT collaboration)	**2019**
Black Hole Initiative Prize for scientific contributions to the EHT project (individual)	**2019**
National Science Foundation Diamond Achievement Award (EHT collaboration)	**2019**
First prize in IXth Nationwide Competition for a Best PhD Thesis "Young Innovators"	**2017**
Polish Prime Minister Award for the best PhD thesis in engineering	**2017**
Foundation for Polish Science START award (in 2015 with distinction as 1 of 5 young scientists nationwide)	**2015 – 2016**
Academic performance award from Polish Ministry of Science and Higher Education	**2013**
Scientific scholarship and travel award from the Center for Advanced Studies Warsaw University of Technology	**2012 – 2013**
SPIE best student presentation award, International Converence on Advanced Topics in Optoelectronics, Microelectronics and Nanotechnology, Constanza, Romania	**2012**
Laureate (6th place nationwide) of the National Mathematics Competition for high school students	**2005**

Publications

49 reviewed scientific journal papers (13 as a first author). 67 papers **listed on ADS** (21 as a first author), 2486 citations, h-index=17, 29 papers cited at least 10 times (ADS, November 2020). Complete list of papers appended.

TALKS

I have given ∼100 professional talks. Below 10 talks that I am particularly happy with.

Monitoring M87* in 2009–2017 with the EHT, Seminar at Radboud University, Nijmegen	**Feb 2020**
Analyzing time variability of Sgr A* in the EHT data, New Horizons in Galactic Center Astronomy and Beyond, Yokohama	**Oct 2019**
Observing AGN sources with the Event Horizon Telescope, IAU 356, Addis Ababa	**Oct 2019**
Optically thick accretion: from theory to the most recent results, University of Waterloo, astronomy seminar	**Sep 2019**
First EHT results, KIPAC seminar, Stanford University	**May 2019**
Event Horizon Telescope, CTA 1st Science Symposium, Bologna	**May 2019**
First EHT results, Astronomy Department, Yale University	**Apr 2019**
Studying variability of Sgr A* with the EHT, CfA, Harvard & Smithsonian	**Feb 2018**
Levitating atmospheres of luminuous neutron stars, Black Hole Initiative, Harvard	**Apr 2017**
Eddington Capture Sphere around luminuous neutron stars, IAU 312, Beijing	**Aug 2014**

GRANTS AND FORMAL PROJECTS

PI: Thin disks GRRMHD simulations **2018 – 2020**
2×10^7 *CPU hours on PROMETHEUS supercomputer from PLGRID*

Named participant: Variable accretion flows **2013 – 2018**
Polish National Science Center Maestro grant, PI: Wlodek Kluźniak

CO-PI: Adaptive processing of fringe patterns in optical whole-field measurements **2013 – 2015**
Polish National Science Center Opus grant, PI: Krzysztof Patorski

PI: Automatic image analysis for nanomaterials research **2012 – 2014**
Foundation for Polish Science VENTURES grant

Named participant: Turbulent viscosity in non-stationary black hole accretion disks **2012 – 2014**
Polish National Science Center Opus grant, PI: Marek Abramowicz

TEACHING EXPERIENCE

Lecturer of astrophysics at the relativistic accretion workshop, University of Bremen **Sep 2016**
Transonic flows, ideal MHD, MRI

Teaching at Warsaw University of Technology **2011 – 2015**
Optomechatronics lab, Mechatronic systems lab, and Instrumental optics lab

Teaching assistant and tutor at Warsaw University **2010 – 2011**
Calculus I & II, linear algebra for math students

OTHER ACTIVITIES

- leading the EHT Time Domain Working Group since 2018
- one of the key contributors to the EHT data set reduction and inspection pipeline development
- reviewer for MNRAS, A&A, ApJ, New Astronomy, Applied Optics, Optics Express, Optics Letters
- SOC member for the EHT polarization workshop in July 2019
- advised multiple students with scientific projects (W. Yan, D. Bollimpalli, S. Steel, D. Lancova)
- named participant on multiple VLBI observational proposals
- reviewer of grant proposals at the Czech Science Foundation in the Astronomy panel

LANGUAGES

- **Polish** [fluent]
- **English** [fluent]
- **Russian** [basic]
- **Spanish** [trying to learn]

NON-SCIENTIFIC INTERESTS

- travelling and tourism
- running (mostly long distances)
- playing the guitar