Michael Pitt

Curriculum Vitae

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December 9, 2019

Employment

2019 - 2021 **Senior Research fellow**, *Experimental Physics Department*, CERN.

2018 - 2019 **Postdoctoral research fellow**, *Department of particle physics and astrophysics*, Weizmann Institute of Science.

Education

2012 – 2018 **Ph.D.**, *Department of particle physics and astrophysics*, Weizmann Institute of Science.
Thesis title: "Experimental research in particle physics: Characterization of gas-avalanche THGEM particle detector and physics-data analysis with the ATLAS experiment" (CERN-THESIS-2018-224)
Advisors: Prof. Amos Breskin & Prof. Eilam Gross

2009 – 2012 **M.Sc.**, *Department of particle physics and astrophysics*, Weizmann Institute of Science.
Thesis title: "Experimental research in particle physics: Detector development and data analysis" (2012 JINST TH 003)
Advisors: Prof. Amos Breskin & Prof. Eilam Gross

2006 – 2009 **B.Sc.**, *Bar-Ilan University*, Ramat Gan.
Double major in Physics and Theoretical Mathematics (with honors)

HEP schools **ESHEP2016** Norway, **EDIT2013** Japan

Research Experience

- **Deep Learning methods for HEP**: Particle-Flow algorithm using calorimeter cells of particle detectors
- **HEP Phenomenology**: Topological studies of energetic multi-jet QCD events
- **ATLAS collaboration**: Identification of photons, Higgs physics, BSM physics
- **CMS collaboration**: low-x physics, Top physics
- **Radiation detection Lab.**:Phenomenology of particle detectors, Test-Beam at CERN, R&D on novel particle detectors

Teaching experience

2019 "Practical Deep Learning for Science (20191142)", Teaching assistant, Weizmann Institute of Science

2017-2018 "Machine learning and python", Lecturer at Computer Science in Academia and Industry program of Davidson institute

Talks

2018 "A Toolkit for the simulation of Detector Charging Up/Down", RD51 collaboration meeting and the "MPDG Stability" workshop, TUM, Munich, Germany

2018 "Gain stability and charging-up phenomena in THGEM-based detectors", RD51 mini-week, CERN

2016 "H+ searches in ATLAS, part 1", Charged2016, Uppsala, Sweden

2016 "H+/W→ $\tau\nu$ searches", ATLAS HBSM and EXOT workshop, Grenoble, France

2014 "Kinematic Reconstruction Techniques", HSG8 workshop, CERN

Technical Skills

Data analysis: statistical inference, machine learning, statistical modeling, Monte-Carlo simulations (high experience with Madgraph5, Pythia8, PowhegBox)
Computing: MATLAB, C/C++, Python, ML tools (Keras, Tensowflow, PyTorch), Garfield++, ROOT, Inventor, LabView, COMSOL
Hardware experience: Operating gas avalanche detectors – GEM, THGEM.
Language: Hebrew and Russian – native speaker, English – fluent.

Miscellaneous

2000 – 2004 Compulsory military service in IDF

Outreach

I participated in counselling and teaching in various enrichment programs hosted by the Davidson Institute of Science Education (the Education Arm of the Weizmann Institute of Science): The international Science Summer Institute, the ALPHA program for the high school students with intellectual giftedness, the Ma'ale program for excelling Arab Students in Science and Engineering, Computer Science in Academia and Industry, Amos de-Shalit Science Youth camp and the Shalhevet Freier International Physics Tournament.

List of assignments appointments in the Davidson Institute of Science education:

2015 – 2017 A member of admission committee of the "ALPHA" program for the high school students with intellectual giftedness

2015 – 2017 Scientific coordinator of the Dr. Bessie F. Lawrence International Science Summer Institute (ISSI)

References

[1] D. Turgeman, M. Pitt, I. Roth and E. Duchovni, *On the Modelling of Energetic Multi-jet QCD Events*, 1912.01254.

[2] ATLAS collaboration, ATLAS Collaboration, *Measurement of the photon identification efficiencies with the ATLAS detector using LHC Run 2 data collected in 2015 and 2016*, *Eur. Phys. J.* **C79** (2019) 205.

[3] ATLAS Collaboration, *Search for charged Higgs bosons decaying via $H^{\pm} \to \tau^{\pm}\nu_{\tau}$ in the τ+jets and τ+lepton final states with 36 fb^{-1} of pp collision data recorded at $\sqrt{s} = 13$ TeV with the ATLAS experiment*, *JHEP* **09** (2018) 139.

[4] M. Pitt, P. M. M. Correia, S. Bressler, A. E. C. Coimbra, D. Shaked Renous, C. D. R. Azevedo et al., *Measurements of charging-up processes in THGEM-based particle detectors*, *JINST* **13** (2018) P03009.

[5] P. M. M. Correia, M. Pitt, C. D. R. Azevedo, A. Breskin, S. Bressler, C. A. B. Oliveira et al., *Simulation of gain stability of THGEM gas-avalanche particle detectors*, *JINST* **13** (2018) P01015.

[6] L. Moleri, F. D. Amaro, L. Arazi, C. D. R. Azevedo, E. Oliveri, M. Pitt et al., *The Resistive-Plate WELL with Argon mixtures – A robust gaseous radiation detector*, *Nucl. Instrum. Meth.* **A 845** (2017) 262.

[7] ATLAS Collaboration, *Measurement of the photon identification efficiencies with the ATLAS detector using LHC Run-1 data*, *Eur. Phys. J.* **C 76** (2016) 666.

[8] ATLAS Collaboration, *Search for charged Higgs bosons produced in association with a top quark and decaying via $H^{\pm} \to \tau\nu$ using pp collision data recorded at $\sqrt{s} = 13$ TeV by the ATLAS detector*, *Phys. Lett.* **B 759** (2016) 555.

[9] ATLAS Collaboration, *Search for charged Higgs bosons in the $H^{\pm} \to tb$ decay channel in pp collisions at $\sqrt{s} = 8$ TeV using the ATLAS detector*, *JHEP* **03** (2016) 127.

[10] S. Bressler, L. Moleri, M. Pitt, S. Kudella, C. Azevedo, F. Amaro et al., *First in-beam studies of a Resistive-Plate WELL gaseous multiplier*, *JINST* **11** (2016) P01005.

[11] ATLAS Collaboration, *Search for the associated production of the Higgs boson with a top quark pair in multilepton final states with the ATLAS detector*, *Phys. Lett.* **B 749** (2015) 519.

[12] ATLAS Collaboration, *Constraints on the off-shell Higgs boson signal strength in the high-mass ZZ and WW final states with the ATLAS detector*, *Eur. Phys. J.* **C 75** (2015) 335.

[13] ATLAS Collaboration, *Evidence for the Higgs-boson Yukawa coupling to tau leptons with the ATLAS detector*, *JHEP* **04** (2015) 117.

[14] L. Arazi, M. Pitt, S. Bressler, L. Moleri, A. Rubin and A. Breskin, *Laboratory studies of THGEM-based WELL structures with resistive anode*, *JINST* **9** (2014) P04011.

[15] S. Bressler, L. Moleri, L. Arazi, E. Erdal, A. Rubin, M. Pitt et al., *A concept for laboratory studies of radiation detectors over a broad dynamic-range: instabilities evaluation in THGEM-structures*, *JINST* **9** (2014) P03005.

[16] S. Bressler, L. Arazi, L. Moleri, M. Pitt, A. Rubin and A. Breskin, *Recent advances with THGEM detectors*, *JINST* **8** (2013) C12012.

[17] A. Rubin, L. Arazi, S. Bressler, L. Moleri, M. Pitt and A. Breskin, *First studies with the Resistive-Plate WELL gaseous multiplier*, *JINST* **8** (2013) P11004.

[18] L. Arazi, C. D. R. Azevedo, A. Breskin, S. Bressler, L. Moleri, H. N. da Luz et al., *Beam Studies of the Segmented Resistive WELL: a Potential Thin Sampling Element for Digital Hadron Calorimetry*, *Nucl. Instrum. Meth.* **A 732** (2013) 199.

[19] A. Rubin, L. Arazi, S. Bressler, A. Dery, L. Moleri, M. Pitt et al., *Optical readout: A tool for studying gas-avalanche processes*, *JINST* **8** (2013) P08001.

[20] S. Bressler, L. Arazi, H. N. da Luz, C. D. R. Azevedo, L. Moleri, E. Oliveri et al., *Beam studies of novel THGEM-based potential sampling elements for Digital Hadron Calorimetry*, *JINST* **8** (2013) P07017.

[21] A. E. C. Coimbra, A. S. Conceição, J. A. Mir, A. Rubin, M. Pitt, A. Breskin et al., *First results with THGEM followed by submillimetric multiplying gap*, *JINST* **8** (2013) P06004.

[22] L. Arazi, H. N. da Luz, D. Freytag, M. Pitt, C. D. R. Azevedo, A. Rubin et al., *THGEM-based detectors for sampling elements in DHCAL: laboratory and beam evaluation*, *JINST* **7** (2012) C05011.

[23] ATLAS collaboration, ATLAS Collaboration, *Search for neutral MSSM Higgs bosons decaying to $\tau^+\tau^-$ pairs in proton-proton collisions at $\sqrt{s} = 7$ TeV with the ATLAS detector*, *Phys. Lett.* **B 705** (2011) 174.

[24] ATLAS Collaboration, *Search for charged Higgs bosons in the τ+jets final state using 14.7 fb^{-1} of pp collision data recorded at $\sqrt{s}$=13 TeV with the ATLAS experiment*, Tech. Rep. ATLAS-CONF-2016-088, CERN, Geneva, 2016.

[25] ATLAS Collaboration, *Photon identification in 2015 ATLAS data*, Tech. Rep. ATL-PHYS-PUB-2016-014, CERN, Geneva, Aug, 2016.