Yiftah Silver

Ph.D. High Energy Physics

☎ +972 54 5391457
yiftahsi@gmail.com

Education

2008 – 2013	**Ph.D. in Experimental High Energy Physics (direct Ph.D. program)** The Raymond and Beverly Sackler School of Physics & AstronomyTel-Aviv University, Israel
Thesis title	*"'Search for signals of physics beyond the standard model with the ATLAS experiment and the development of radiation detectors"'. Full description attached bellow.*
Supervisor	Prof. Erez Etzion
2010 – 2011	**Visiting research investigator**, *Department of physics*, University of Michigan, Ann- Arbor MI.
Description	Appointed as a "Visiting research investigator" In order to work on the Plasma Panel Detector Research and development project. The work was with the University of Michigan ATLAS High Energy Physics group, included extensive laboratory work as well as simulation and modeling effort
2007 – 2008	**M.S.c in Physics**, *The Raymond and Beverly Sackler School of Physics & Astronomy*, Tel Aviv University, Israel. Moved to the direct program towards Ph.D. for outstanding, first year M.S.c. students
2004 – 2007	**B.S.c in Physics**, *The Raymond and Beverly Sackler School of Physics & Astronomy*, Tel Aviv University, Israel. Graduated *magna cum laude*

Employment History

2014 - present	**Senior Research Scientist**, *Technical Physics group*, RAFAEL advanced defence systems LTD., Israel.
2014	**Postdoctoral fellow**, *The Raymond and Beverly Sackler School of Physics & Astronomy*, Tel Aviv University, Israel.
Description	Working on the Plasma Panel Detector Research and development project.
2014	Lecturer of the "Ordinary Differential Equations" courses for first year undergraduates at the International School of Engineering, Tel-Aviv University.
2013 - 2014	Teaching assistant of the "Physics 0,1 - mechanics" and "Physics 2 – Electricity and Magnetism" courses for first year undergraduates at the International School of Engineering, Tel-Aviv University.
summer 2012	Lecturer for the "Physics 2 - Electricity and Magnetism" course for first and second year undergraduates at Tel-Aviv University.
2009 – 2013	Teaching assistant of the "Physics 2 - Electricity and Magnetism" course for first and second year undergraduates at Tel-Aviv University.
2011	A senior marker at the 12th Asian Physics Olympiad Homepage: http://apho2011.tau.ac.il
2007 – 2009	Supervising instructor of physics laboratory for first year undergraduates at Tel Aviv University.

Thesis description

Detector R&D

The thesis contains two parts; the first describes the development of the Plasma Panel Sensor (PPS), a new radiation detector technology based on the well known Plasma Display Panel (PDP) technology for a number of scientific and commercial applications. The development process of the detectors involved laboratory work, both in the Tel-Aviv University laboratory and in the University of Michigan laboratory (in which I worked for six month). I joined the PPS collaboration in its early days, as a consequence, I made contribution in every aspect of the development. The process began with the design and construction of the gas system. Through the design and manufacture of the very front end connectors and electronics. Simulation work, mainly for the electronic characteristics of the detector and also for the electric field (mostly using COMSOL). I also constructed the data acquisition system (LABVIEW, NIM and VME based) in the Tel-Aviv Laboratory and wrote its analysis code (mostly C++).

Research at CERN

The second part of the thesis describes the search for Heavy neutral gauge boson within the ATLAS experiment. It includes the results from two analyses of pp collisions decaying into e^+e^- pairs at a center-of-mass energy of 7 TeV (collected during 2011) and 8 TeV (collected during 2012) at the Large Hadron Collider (LHC) at CERN. The analysis (that was done with perl, C++ and ruby) focused on a search for Z_0 boson and also the possibility of one extra spatial dimension within the Kaluza-Klein (KK) S_1/Z_2 model. The KK model signature that I concentrate on is a tower of massive excitations of the $/Z_0$ particles where the mass of the first KK excitation (assumed at m _ 1 TeV) is inversely related to the extra dimension size. In addition to the analysis described in this part, and as a preliminary step, I have implemented the KK model in a common simulation tool used in High Energy Physics (HEP), the Pythia8 event generator and validated its results against the theoretical calculations (mostly C++ and perl).

Awards & Scholarships

2016, 2017, 2019	Armament Systems Division excellence prize (received three times)
2017 – 2023	Katzir Fellowship recipient of a six year scholarship
2014	Received excellence in teaching citation from the faculty of engineering
2013	Received the Rector's excellence in teaching citation
2013	Rector's list for excellence in teaching
2013	Received excellence in teaching citation from the faculty of engineering
2013	Won the "*Cohen Ann and Morris*" prize on excellence in research
2013	Won the "*Cohen Ann and Morris*" prize on excellence in teaching
2012	Rector's list for excellence in teaching
2011	Won the "*Cohen Ann and Morris*" prize on excellence in teaching
2010	Received excellence in teaching citation from the faculty of engineering

Scientific Activities

2016-2019	Main researcher of PAZY Grant (funded for four years) *Development of radiation detectors for imaging of large mechanical structures using cosmic ray muons*.
2018	Presented a poster at the 2018 NSS-MIC conference, Sydney Australia
2016	Given a talk at the Israel Physical Society IPS conference 2016, Tel Aviv University
2015	Presented a poster at the MeVArc conference, Lapland Finland
2013	Given a seminar at the Israeli Centers of Research Excellence (i-CORE), Tel Aviv, Israel
2013	Given a talk at the ICATPP conference, Como, Italy
2013	Given a seminar at the School of Physics & Astronomy, Tel-Aviv University, Israel
2012	Presented a poster on behalf of the ATLAS collaboration at the CIPANP conference, Florida, USA
2011	Given a talk in IEEE Nuclear and Plasma Science Symposium, Valencia, Spain
2011	Presented a poster at the FPCP, Kibutz Ma'ale Hahamisha, Israel

Publications

2019 "MATHUSLA: A Detector Proposal to Explore the Lifetime Frontier at the HL-LHC" H. Lubatti, E. Etzion, G. Mizrachi, Y. Silver et al. [MATHUSLA Collaboration], FERMILAB-PUB-19-016-CMS, arXiv:1901.04040 [hep-ex] (2019)

2018 "A Letter of Intent for MATHUSLA: a dedicated displaced vertex detector above ATLAS or CMS." C. Alpigiani, E. Etzion, Y. Silver et al. arXiv:1811.00927 [physics.ins-det] CERN-LHCC-2018-025, LHCC-I-031

2017 *Velocity and ion charge in a copper plasma plume ejected from 5 microsecond vacuum arcs*, *Y.Silver et al*. Journal of Applied Physics 121, 053301 (2017); https://doi.org/10.1063/1.4974869

2015 *First results with a microcavity plasma panel detector*, R. Ball, E. Etzion, Y. Silver, et al., Nucl.Instrum.Meth. A784 (2015) 56-59 arXiv:1407.6491 [physics.ins-det]

2014 *Development of a plasma panel radiation detector*, Nucl. Instr. and Methods A, July 2014, NIMA-D-14-00277R1

2013 *Plasma panel-based radiation detectors* Peter Friedman, E. Etzion, Y. Silver, et al. J.Soc.Info.Display 21 (2013) 46-54, DOI: 10.1002/jsid.151

2012 *Plasma Panel Sensors for Particle and Beam Detection* Peter Friedman E. Etzion, Y. Silver et al. Conference: C12-10-29, p.1775-1780 Proceedings, DOI: 10.1109/NSSMIC.2012.6551416

2011 *Development of a Plasma Panel Radiation Detector: Recent Progress and Key Issues* Silver, Y. et al. IEEE Nucl.Sci.Symp.Conf.Rec. 2011 (2011) 1881-1885, DOI: 10.1109/NSSMIC.2011.6154379

2011 *Development of a Plasma Panel Muon Detector*,D.S. Levin, E. Etzion, Y. Silver et al., Nucl. Instr. And Methods A (2011) DOI: 10.1016/j.nima.2010.07.076

2010 *Progress in the Development of Plasma Panel Radiation Detectors* R. Ball, E. Etzion, Y. Silver et al., Knoxville: IEEE 2010 Nucl. Sci. Symp. & Med. Imaging Conf., paper N50-7 (Nov. 2010)

2010 *A search for heavy Kaluza-Klein electroweak gauge bosons at the LHC*, G. Bella, E. Etzion, N. Hod, Y. Oz, Y. Silver and M. Sutton. Journal of high energy physics, Volume 2010, Number 9, 1-17, DOI:10.1007/JHEP09(2010)025 http://arxiv.org/abs/1004.2432

Over 270 ATLAS publications (Shown here specific contribution only)

ATLAS Internal note *Search for high mass dilepton resonances with 6.1 fb^{-1} of pp collisions at $\sqrt{s}$ = 8 TeV*

2012 *Search for high mass dilepton resonances with 5 fb^{-1} of pp collisions at $\sqrt{s}$ = 7 TeV with the ATLAS experiment*, The ATLAS Collaboration Mar 2012, ATLAS-CONF-2012-007.

2012 *Search for high-mass resonances decaying to dilepton final states in pp collisions at a center-of-mass energy of 7 TeV with the ATLAS detector*The ATLAS Collaboration Sept. 2012 JHEP 1211 (2012) 138, DOI 10.1007/JHEP11(2012)138