# Ayesh L Jayasinghe

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## Present Appointment

Senior Lecturer (Grade I)

Department of Radiography/Radiotherapy,

Faculty of Allied Health Sciences,

University of Peradeniya.

## Education

Ph.D. in High Energy Particle Physics, University of Oklahoma, Norman,USA

MS in Physics, University of Oklahoma, Norman, USA

B.Sc. in Physics, University of Peradeniya, Peradeniya, Sri Lanka

## Positions and Memberships

2022-To date: Head of the Department, Department of Radiography/Radiotherapy, Faculty of Allied Health Sciences, University of Peradeniya

2017.09 -2017.11 :Acting Head of the Department, Department of Physiotherapy, Faculty of Allied Health Sciences, University of Peradeniya

2019-To date: Director, Student Welfare and Advisory Committee, Faculty of Allied Health Sciences, University of Peradeniya

2022-To date: Member, Subject Expert Panel, Radiography, Ceylon Medical College Council

2023-To date : Member, Subject Benchmark Panel: Radiography/Radiotherapy, University Grants Commission

2023-To date : Member, Board of Study in Physics, Post Graduate Institute of Science, University of Peradeniya

## Working Experience

2015-2021 Senior Lecturer (Grade II) : Department of Radiography/ Radiotherapy, Faculty of Allied Health Sciences, University of Peradeniya

2014-2015 Senior Lecturer (Contract basis) : Department of Radiography/ Radiotherapy, Faculty of Allied Health Sciences, University of Peradeniya

2013-2014 Senior Lecturer (Temporary) : Department of Radiography/ Radiotherapy, Faculty of Allied Health Sciences, University of Peradeniya

2009-2013 Research Assistant : Fermi National Accelerator Laboratory, Batavia, IL, USA and Homer L. Dodge Department of Physics and Astronomy, University of Oklahoma, Norman ,OK, USA

2009-2013 Local System Administrator: for the University of Oklahoma Linux cluster at DØ experiment, Fermi National Accelerator Laboratory, Batavia, IL, USA

2009 Summer Research Assistant : The European Organization for Nuclear Research (CERN), Geneva, Switzerland and Homer L. Dodge Department of Physics and Astronomy, University of Oklahoma, Norman , OK, USA.

2006-2008 Teaching Assistant: Homer L. Dodge Department of Physics and Astronomy, University of Oklahoma, Norman , OK, USA.

2005-2006 Temporary Demonstrator: Department of Physics, University of Peradeniya, Peradeniya, Sri Lanka.

## Research Experience

Published over 150 peer reviewed articles in the areas of Radiation Physics, Medical Imaging, Dental Sciences and High Energy Particle Physics of which many articles being cited more than 100 times.

Have served as a reviewer for University Research Grant Proposals, International Peradeniya University Research Symposium and General Sir John Kotelawala Defense University International Research Conference

Have formed and working for many multidisciplinary research groups in the University of Peradeniya in the fields of Radiation Physics, Radiation Protection, Medical Image Processing and Dental Sciences

Worked for the top working group for the measurement of top quark mass in the all hadronic decay channel

Collaborated with the Jet Energy Scale group for the derivation of Jet Energy Scale corrections for RunIIB data for the DØ detector, Fermi National Accelerator Laboratory

Partook in Data Acquisition, which is the most important role in the process of collecting data; and Calorimeter Muon shifts, to collect data in the DØ experiment,Fermi National Accelerator Laboratory

Summer 2009: Contributed to the group which assessed the radiation effect on the environmental gas mixture of the ATLAS pixel detector at the European Organization for Nuclear Research (CERN), Geneva, Switzerland.

# Research Publications

1. DML Wijesinghe, WSS Gunathilake, WBMCRD Weerasekera, UJMAL Jayasinghe (2024). Corrosion Analysis of Orthodontic Brackets and Arch Wires–An in vitro Study, Ceylon Journal of Science, Volume 53, Issue1.

2. Lakmini Chandrasiri, Badra Hewavithana, Ayesh Jayasinghe, Bimali Weerakoon, Prabhath Gunathilake, Sachith Abeysundara A quantitative approach to assess the correlation of mammographic breast density with selected affecting factors, Ceylon Medical Journal, Volume 67, Issue 3.

3. Victor Mukhamedovich Abazov et al. Jet Energy Scale Determination in the D0 Experiment. *Nucl. Instrum. Meth. A*, 763:442–475, 2014

4. V. M. Abazov et al. Odderon Exchange from Elastic Scattering Differences between $pp$ and $p\bar{p}$ Data at 1.96 TeV and from pp Forward Scattering Measurements. *Phys. Rev. Lett.*, 127(6):062003, 2021

5.Victor Mukhamedovich Abazov et al. Studies of $X(3872)$ and $\psi(2S)$ production in $p\bar{p}$ collisions at 1.96 TeV. *Phys. Rev. D*, 102(7):072005, 2020

6 Victor Mukhamedovich Abazov et al. Study of the normalized transverse momentum distribution of $W$ bosons produced in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV. *Phys. Rev. D*, 103(1):012003, 2021

7.Victor Mukhamedovich Abazov et al. Properties of $Z_c^{\pm}(3900)$ Produced in $p\bar{p}$ Collision. *Phys. Rev. D*, 100:012005, 2019

8.Victor Mukhamedovich Abazov et al. Evidence for $Z_c^{\pm}(3900)$ in semi-inclusive decays of $b$-flavored hadrons. *Phys. Rev. D*, 98(5):052010, 2018

9.Timo Antero Aaltonen et al. Tevatron Run II combination of the effective leptonic electroweak mixing angle. *Phys. Rev. D*, 97(11):112007, 2018

10 Victor Mukhamedovich Abazov et al. Study of the $X^{\pm}(5568)$ state with semileptonic decays of the $B_s^0$ meson. *Phys. Rev. D*, 97(9):092004, 2018

11.Victor Mukhamedovich Abazov et al. Measurement of the Effective Weak Mixing Angle in $p\bar{p} \to Z/\gamma^* \to \ell^+\ell^-$ Events. *Phys. Rev. Lett.*, 120(24):241802, 2018

12 .Timo Antero Aaltonen et al. Combined Forward-Backward Asymmetry Measurements in Top-Antitop Quark Production at the Tevatron. *Phys. Rev. Lett.*, 120(4):042001, 2018

13.Victor Mukhamedovich Abazov et al. Combination of D0 measurements of the top quark mass. *Phys. Rev. D*, 95(11):112004, 2017

14.Victor Mukhamedovich Abazov et al. Measurement of the direct CP violating charge asymmetry in $B^{\pm} \to \mu^{\pm}\nu_{\mu}D^0$ decays. *Phys. Rev. D*, 95(3):031101, 2017

15.Victor Mukhamedovich Abazov et al. Measurement of top quark polarization in $t\bar{t}$ lepton+jets final states. *Phys. Rev. D*, 95(1):011101, 2017

16.Victor Mukhamedovich Abazov et al. Measurement of the Top Quark Mass Using the Matrix Element Technique in Dilepton Final States. *Phys. Rev. D*, 94(3):032004, 2016

17.Victor Mukhamedovich Abazov et al. Measurement of the Inclusive $t\bar{t}$ Production Cross Section in $p\bar{p}$ Collisions at $\sqrt{s} = 1.96$ TeV and Determination of the Top Quark Pole Mass. *Phys. Rev. D*, 94:092004, 2016

18.Victor Mukhamedovich Abazov et al. Measurement of the Forward-Backward Asymmetries in the Production of $\Xi$ and $\Omega$ Baryons in $p\bar{p}$ Collisions. *Phys. Rev. D*, 93(11):112001, 2016

19.Victor Mukhamedovich Abazov et al. $B_s^0$ lifetime measurement in the CP-odd decay channel $B_s^0 \to J/\psi f_0(980)$. *Phys. Rev. D*, 94(1):012001, 2016

20 Victor Mukhamedovich Abazov et al. Measurement of Spin Correlation between Top and Antitop Quarks Produced in $p\bar{p}$ Collisions at $\sqrt{s} = 1.96$ TeV. *Phys. Lett. B*, 757:199–206, 2016

21 Victor Mukhamedovich Abazov et al. Study of double parton interactions in diphoton + dijet events in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV. *Phys. Rev. D*, 93(5):052008, 2016

22.Victor Mukhamedovich Abazov et al. Measurement of the forward-backward asymmetry of $\Lambda$ and $\bar{\Lambda}$ production in $p\bar{p}$ collisions. *Phys. Rev. D*, 93(3):032002, 2016

23.Victor Mukhamedovich Abazov et al. Evidence for simultaneous production of $J/\psi$ and $\Upsilon$ mesons. *Phys. Rev. Lett.*, 116(8):082002, 2016

24.Victor Mukhamedovich Abazov et al. Inclusive Production of the X(4140) State in $p\bar{p}$ Collisions at D0. *Phys. Rev. Lett.*, 115(23):232001, 2015

25.Victor Mukhamedovich Abazov et al. Precise measurement of the top quark mass in dilepton decays using optimized neutrino weighting. *Phys. Lett. B*, 752:18–26, 2016

26.Victor Mukhamedovich Abazov et al. Simultaneous measurement of forward-backward asymmetry and top polarization in dilepton final states from $t\bar{t}$ production at the Tevatron. *Phys. Rev. D*, 92:052007, 2015

27.Victor Mukhamedovich Abazov et al. Search for Violation of $CPT$ and Lorentz Invariance in $B_s^0$ Meson Oscillations. *Phys. Rev. Lett.*, 115(16):161601, 2015. [Addendum: Phys.Rev.Lett. 116, 019901 (2016)]

28.Timo Antero Aaltonen et al. Tevatron Combination of Single-Top-Quark Cross Sections and Determination of the Magnitude of the Cabibbo-Kobayashi-Maskawa Matrix Element $\mathbf{V_{tb}}$. *Phys. Rev. Lett.*, 115(15):152003, 2015

**High Energy Particle Physics Full List of Publications :**
***https://inspirehep.net/authors/1065769?ui-citation-summary=trueui-exclude-self-citations=true***

## Abstracts

1. Comparison of X-Ray Attenuation in the Energy Range of 50-80 keV in Aluminium and Zircon Mineral Encased in Epoxy Matrix. A.D.K.M.Weerasekara, V. Sivakumar, C.P. Jayalath, A. Jayasinghe, T.M.W.J. Bandara, K. Wijayaratne, D.M.T. Gnanarathne and D.K.K. Nanayakkara. Proceedings of the Postgraduate Institute of Science Research Congress, University of Peradeniya, Sri Lanka: 3rd-4th November 2023 (RESCON 2023). ISBN 978-955-8787-09-0

2. Attenuation properties of minerals found in Sri Lanka for high-energy photons, (2022), V Sivakumar, A D K M Weerasekara, D M T Gnanarathne, C P Jayalath, A Jayasinghe, K Wijayaratne, and T M W J Bandara, 11th International Conference in Radiation (RAD 2023), June 19-23 2023, Montenegro. https://doi.org/10.21175/rad.abstr.book.2023.36.14

3. Incorporation of Sri Lanka's natural minerals, zircon and apatite in radiation shielding (2022) M. U. Ranasinghe, E. M. D. K. B. Hathnagoda, D. K. K. Nanayakkara, K. Wijayaratne, T. M. W. J. Bandara, U. J. M. A. L. Jayasinghe, C. P. Jayalath and V. Sivakumar, International Conference on Applied and Pure Sciences (ICAPS 2022), October 14 2022, University of Kelaniya. ISSN 2815-0112.

4. Formulation and Validation of a Quantitative Method to Estimate Mammographic Breast Density, I.L.U. Chandrasiri, P.B. Hewavithana, A. Jayasinghe, B.S. Weerakoon, P.M.P.C. Gunathilake and S.P. Abeysundara, iPURSE2021-Proceedings

5. Quantitative Assessment of Facial Asymmetry using a Computer Aided Tool, U. U. R. Leelananda, L. A. B. P. Liyanaarachchi, N. V. A. ,Madhumali, W. B. M. C. R. D. Weerasekera, A. Jayasinghe Dental Students' Research Symposium :STURESY 2023

6. Top mass measurement in the all-jet channel with a template method , A. JayasingheAPS April Meeting 2013, Volume 58, Number 4

7. Background model for measurement of top mass in fully hadronic channel at D0, A. Jayasinghe, APS April Meeting 2011, Volume 56, Number 4

## Grants Received

2022- University of Peradeniya Multidisciplinary Research Grant 265 : Radiation shielding for medical procedures: synthesis of cost-effective, lead-free material V. Sivakumar, C.P. Jayalath, U. J. M. A. L. Jayasinghe, D. K. K. Nanayakkara, T. M. W. J. Bandara, K. B. Wijayaratne

2021- University Research Grant No URG/2021/01/AHS, Assessment of correlation between area-based mammographic breast density and patient-related affecting factors to predict breast density, I. L. U. Chandrasiri, U. J. M. A. L. Jayasinghe

## Awards Received

- Faculty Research Award 2022, Faculty of Allied Health Sciences, University of Peradeniya
- Tier 4* Research Award University of Peradeniya, 2022
- DPF student travel award to April American Physical Society meeting 2013
- Robberson conference presentation and creative exhibition travel grant April 2013
- DPF student travel award to April American Physical Society meeting. 2011
- Sooner Heritage Scholarship, University of Oklahoma 2010/2011

## Teaching

RA 1103: General Physics, RA 1104: Mathematics-I, RA 1105: Introduction to Electronics and Instrumentation, RA 1201 : Atomic and Radiation Physics, RA1202 : Radiobiology and Radiation Protection, RA 2102: Fluoroscopy – I, RA 2105 : Modern Physics for students at the
Department of Radiography/ Radiotherapy, Faculty of Allied Health Sciences University of Peradeniya.

PHYS 1311 General Physics Laboratory I for 1st year undergraduate students,
Homer L. Dodge Department of Physics and Astronomy, University of Oklahoma, Norman , OK, USA. 2007-2009

PH 380, PH 381 General Physics Laboratory III, IV for 3rd year undergraduate students,
University of Peradeniya, Peradeniya, Sri Lanka. 2005-2006

## References

Prof. Phil Gutierrez
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Prof. H. M. T. U. Herath
Professor
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