

Amina E. Hussein, PhD

University of Alberta, Department of Electrical & Computer Engineering
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RESEARCH INTERESTS

Experiments and numerical modeling of intense laser-matter interactions: relativistic electron acceleration, laser wakefield acceleration, ion acceleration; the generation and application of laser-driven X-rays, gamma-rays, infrared pulses and high-order harmonic generation; laser induced breakdown spectroscopy.

POSITIONS

Assistant Professor , Department of Electrical & Computer Engineering University of Alberta, Edmonton, AB, Canada	07/2020 - Present
UC President's Postdoctoral Fellow , Department of Physics & Astronomy University of California, Irvine, CA, USA	07/2019 - 06/2020
Research Assistant , Center for Ultrafast Optical Science University of Michigan, Ann Arbor, MI, USA	09/2015 - 06/2019
Research Aide , Argonne Leadership Computing Facility Argonne National Laboratory, Lemont, IL, USA	06/2015 - 08/2015
Research Assistant , Department of Computer Science Purdue University, West Lafayette, IN, USA	01/2015 - 05/2015
Research Assistant , Department of Nuclear Engineering Purdue University, West Lafayette, IN, USA	09/2013 - 01/2015
Visiting Scholar , Department of Nuclear Engineering Purdue University, West Lafayette, IN, USA	05/2012 - 08/2012
Research Assistant , Department of Neurology & Neurosurgery McGill University, Montréal, QC, Canada	05/2011 - 08/2011

EDUCATION

Ph.D. Applied Physics University of Michigan, Ann Arbor, MI, USA Advisor: Prof. Karl Krushelnick & Prof. Louise Willingale Dissertation title: <i>Laser-driven electron accelerators as a broadband radiation source</i>	2015 - 2019
M.S. Nuclear Engineering Purdue University, West Lafayette, IN, USA Advisor: Prof. Ahmed Hassanein	2013 - 2015
B.Sc. Honours, Physics McGill University, Montréal, QC, Canada Honours thesis advisor: Prof. Mark Sutton	2008 - 2013

FUNDING

External funding total as PI: \$630,500 CAD + \$156,367 USD

NSERC, Discovery Grant 04/2021-04/2026

PI: Amina E. Hussein

Amount: \$132,500 CAD

New frontiers in intense laser-matter interactions. Awarded five years of research funding in pursuit of long-term projects in fundamental laser-matter interactions and the training of highly-qualified personnel in the natural sciences and engineering in Canadian Universities. Includes \$12,500 Discovery Launch award.

Compute Canada, Resources for Research Groups 2021 Competition 04/2021-03/2022

PI: Amina E. Hussein

Amount: \$14,639 CAD equivalent cost of resources

New frontiers in intense laser-matter interactions. Awarded 98 core years and 50 TB of project storage for numerical simulations of intense laser-matter interactions through a competitive scientific peer review process.

US Department of Energy, Fusion Energy Sciences, LaserNetUS 03/2021-12/2022

PI: Amina E. Hussein

Collaborators: J. Moore (Marquette University), L. Zhou (Marquette University)

Amount: \$81,250 USD + facility access

High-resolution betatron X-ray imaging of porosity evolution in additively manufactured alloys. Awarded 3 weeks of beamtime on the INRS Advanced Laser Light Source in an international competition and research funding as a sub-contract through the US Department of Energy, Office of Fusion Energy Sciences.

Alberta Innovates Smart Agriculture and Food Digitization and Automation Challenge 03/2021-12/2023

PI: Amina E. Hussein

Collaborators: Frank Hegmann (UAlberta), Miles Dyck (UAlberta), Abdul Bais (URegina)

Amount: \$498,000 CAD + \$430,000 CAD in-kind

Laser Induced Breakdown Spectroscopy for in-situ soil analysis. Awarded 3 years of research funding to develop portable and lab-based devices for rapid, high-sensitivity analysis of agricultural soils, including in-kind support from *CropPro Consulting* (Saskatchewan), *Enersoft* (Alberta) and *Boreal Laser* (Alberta).

Shastri Indo-Canadian Institute, Golden Jubilee Conference and Lecture Series Grant 02/2021-03/2021

Director: Amartya Sengupta (IIT Delhi)

Collaborators: Amina E. Hussein (UAlberta), Aparajita Bandyopadhyay (IIT Delhi)

Amount: 1,10,000 Rs

Science and Technology for the New Age - Acquisition, Analysis and Adaptation. Awarded funding to host a workshop covering agriculture, energy and climate issues from March 3-5, 2021 to stimulate cross-discipline discussions and collaborations between India and Canada.

US Department of Energy, Fusion Energy Sciences, LaserNetUS 07/2020-12/2021

PI: Amina E. Hussein

Collaborators: K. Flippo (LANL), F. Dollar (UCI), L. Gao (PPPL), K. Hill (PPPL), S. Hansen (SNL), R. Shepherd (LLNL)

Amount: \$75,117 USD + facility access

The role of hot electrons in the generation of anomalous X-ray spectra from ultra-intense laser-plasma interactions. Awarded 3 weeks of experimental time at Colorado State University Advanced Beam Laboratory in an international competition and research funding as a sub-contract through the US Department of Energy, Office of Fusion Energy Sciences.

STUDENT SUPERVISION

Doctoral students:

Vigneshvar Senthilkumaran (PhD, Photonics and Plasmas 2024 *expected*)

Master's students:

Mohammad Kabir (MSc, Photonics and Plasmas 2023 *expected*)

Aran McDowel (Co-Supervised with Prof. Frank Hegmann, MSc, Physics, 2023)

Undergraduate Students:

Alvaro Arce-Borkent (Winter 2021 Co-Op, B.Sc. Mechanical Engineering 2022 *expected*)

Liam Droog (NSERC USRA Summer 2021, B.Sc. Physics *expected*)

Fatima Keserwan (NSERC USRA Summer 2021, Co-Supervised with Prof. Mohamed El-Din, B.Sc. Civil & Environmental Engineering, *expected*)

HONORS AND AWARDS

SCHOLARSHIPS AND PRIZES

University of California President's Postdoctoral Fellowship, (<i>\$71,125 USD, faculty hiring incentive</i>)	2019
University of Michigan Rackham Graduate Student Research Grant, (<i>\$3,000 USD</i>)	2019
Michigan Institute for Plasma Science and Engineering Fellowship, (<i>\$4,000 USD</i>)	2018
University of Michigan Marian Sarah Parker Graduate Prize, (<i>\$1,000 USD</i>)	2018
U-M Library Student Mini-Grant, (<i>\$1,000 USD</i>)	2017
SPiE Laser Technology, Engineering and Applications Scholarship, (<i>\$5,000 USD</i>)	2015
NSERC of Canada Postgraduate Doctoral Scholarship, (<i>\$63,000 CAD</i>)	2015 - 2018
UCSD California Research Assistantship Fellowship, (<i>\$50,546 USD, declined</i>)	2015 - 2017
SPiE Optics and Photonics Education Scholarship (<i>\$2 000 USD</i>)	2013
IEEE Nuclear and Plasma Sciences Phelps Grant (<i>\$750 USD</i>)	2013
McGill University Mobility Award, (<i>\$3 000 CAD</i>)	2012

PRESENTATION AWARDS

Best Poster Award, MIPSE Graduate Student Symposium	2018
Outstanding Poster Award, International Committee on Ultrahigh Intensity Lasers Conference	2018
First Place Poster Award, OMEGA Laser Users' Workshop , Rochester, NY	2018
Best Poster Award, OMEGA Laser Users' Workshop , Rochester, NY	2016
Best Poster Award, Conference for Undergraduate Women in Physics , Caltech, Pasadena, CA	2013
Third Prize Talk, Applied Physics, Canadian Undergraduate Physics Conference , Vancouver, BC	2012

Second Prize Poster, McGill Department of Physics Poster Presentations, Montréal, QC 2012

ADDITIONAL HONORS

Elected to the Executive Council of the [Jupiter Laser Facility Users' Group](#) 2021
Institute of Physics [Trusted Reviewer Status](#) 2020
Scientific Reports [Top 100 Physics Articles in 2019](#) 2020
Invited remarks, [University of Michigan Nobel Laureate Lecture](#) featuring Prof. Gérard Mourou 2019
Invited to partake in the [2018 University of Michigan Engineering Graduate Symposium](#) 2018
Travel Award, [The First Annual Users Meeting of LMJ-Petal](#) 2018
Invited to partake in the [2018 Communicating Science Conference, Michigan](#) 2018
Selected to attend the NNSA/CEA Postdoctoral Exchange Workshop in Paris, FR 2018
Nominated to the ballot of the [OMEGA Laser Users' Group](#) Executive Committee 2018
Travel Award, [Conference for Undergraduate Women in Physics](#), Caltech 2013
Award to represent McGill University at the [Canadian Undergraduate Physics Conference](#) 2012
Departmental nomination to the [McGill Faculty of Science Undergraduate Research Conference](#) 2012

PUBLICATIONS

REFERRED JOURNAL PUBLICATIONS

- [14] Y. Ma, D. Seipt, **A.E. Hussein**, S. Hakimi, N.F. Beier, S.B. Hansen, J. Hinojosa, A. Maksimchuk, J. Nees, K. Krushelnick, A.G.R. Thomas, F. Dollar, *The effects of laser polarization and wavelength on injection dynamics of a laser wakefield accelerator*, Physics of Plasmas, Invited Paper (Accepted 05/2021)
- [13] **A.E. Hussein**, J.D. Ludwig, Y. Ma, P.-E. Masson-Laborde, P.J. Skrodzki, J. Hinojosa, E. Peterson, I. Jovanovic, A. Maksimchuk, J. Nees, A.G.R. Thomas, W. Rozmus, K. Krushelnick, *Multi-millijoule mid-infrared radiation from a laser wakefield accelerator*, Physical Review Letters, Under revision (LS17666)
- [12] M. Stanfield, N. Beier, S. Hakimi, H. Allison, D. Farinella, **A.E. Hussein**, T. Tajima and F. Dollar, *Relativistic few cycle laser pulses produced from self phase modulation in thin dielectric media*, [Optics Express](#), **29** 6 (2021)
- [11] **A.E. Hussein**, A.V. Arefiev, T. Batson, H. Chen, R.S. Craxton, A.S. Davies, D.H. Froula, Z. Gong, D. Haberberger, Y. Ma, P.M. Nilson, W. Theobald, T. Wang, K. Weichman, G.J. Williams, L. Willingale, *Towards the optimization of direct laser acceleration*, [New Journal of Physics](#), **23** 023031 (2021)
- [10] Y. Ma, D. Seipt, **A.E. Hussein**, S. Hakimi, N.F. Beier, S.B. Hansen, J. Hinojosa, A. Maksimchuk, J. Nees, K. Krushelnick, A.G.R. Thomas, F. Dollar, *Polarization-dependent self-injection by above threshold ionization heating in a laser wakefield accelerator*, [Physical Review Letters](#), **124**, 114801 (2020)
- [9] K. Behm, **A.E. Hussein**, T.Z. Zhao, R.A. Baggott, J.M. Cole, E. Hill, K. Krushelnick, A. Maksimchuk, J. Nees, S.J. Rose, A.G.R. Thomas, R. Watt, J.C. Wood, V. Yanovsky, S.P.D. Mangles, *Demonstration of Femtosecond Broadband X-rays from Laser Wakefield Acceleration as a Source for Pump-Probe X-ray Absorption Studies*, [High Energy Density Physics](#) **35**, 100729 (2020)

- [8] B. Kettle, E. Gerstmayr, M.J.V. Streeter, F. Albert, R.A. Baggott, J.M. Cole, S. Dann, K. Falk, I.G. Gonzalez, **A.E. Hussein**, N. Lemos, N.C. Lopes, O. Lundh, Y. Ma, S.J. Rose, C. Spindloe, M. Smid, D.R. Symes, A.G.R. Thomas, R. Watt, S.P.D. Mangles, *Single shot multi-keV X-ray absorption spectroscopy using an ultrashort laser wakefield accelerator source*, [Physical Review Letters](#) **123**, 25 (2019)
- [7] P.T. Campbell, D. Canning, **A.E. Hussein**, K. Krushelnick, A.G.R. Thomas, L. Willingale, *Proton beam emittance growth due to surface plasma expansion and filamentation in kilojoule-class, multipicosecond laser-solid interactions*, [New Journal of Physics](#) **21**, 103021 (2019)
- [6] J. Li, P. Forestier-Colleoni, M. Bailly-Grandvaux, C. McGuffey, A.V. Arefiev, S.S. Bulanov, D.C. Gautier, J. Peebles, C. Krauland, **A.E. Hussein**, T. Batson, J.C. Fernandex, S. Palaniyappan, R.P. Johnson, G. Petrov, F.N. Beg, *Laser-driven acceleration of quasi-monoenergetic, near-collimated titanium ions via a transparency-enhanced acceleration scheme*, [New Journal of Physics](#) **21**, 103005 (2019)
- [5] **A.E. Hussein**, N. Senabulya, Y. Ma, M.J.V. Streeter, B. Kettle, S.J.D. Dann, F. Albert, N. Bourgeois, S. Cipiccia, J.M. Cole, O. Finlay, E. Gerstmayr, I. Gallardo González, A. Higginbotham, D.A. Jaroszynski, K. Falk, K. Krushelnick, N. Lemos, N.C. Lopes, C. Lumsdon, O. Lundh, S.P.D. Mangles, Z. Najmudin, P.P. Rajeev, C.M. Schlepütz, M. Shahzad, M. Smid, R. Spesyvtsev, D.R. Symes, G. Vieux, L. Willingale, J. C. Wood, A.J. Shahani and A.G.R. Thomas, *Laser-wakefield accelerators for high-resolution X-ray imaging of complex microstructures*, [Scientific Reports](#), **9**, 3249 (2019)
**Scientific Reports top 100 physics articles published in 2019, among top 25 most accessed*
- [4] K. Behm, **A. Hussein**, T.Z. Zhao, B. Hou, V. Yanovsky, J. Nees, A. Maksimchuk, W. Schumaker, K. Krushelnick, A.G.R. Thomas, *Measurements of electron beam ring structures from laser wakefield accelerators*, [Plasma Physics and Controlled Fusion](#) (2019)
- [3] D.M. Farinella, J. Wheeler, **A.E. Hussein**, J. Nees, M. Stanfield, N. Beier, G. Cojocar, G. Ungureanu, M. Pittman, J. Demailly, E. Baynard, R. Fabbri, R. Secareanu, M. Masruri, R. Dabu, A. Naziru, A. Maksimchuk, K. Krushelnick, G. Mourou, T. Tajima, F. Dollar, *Focusability of laser pulses at petawatt transport intensities in thin-film compression*, [Journal of the Optical Society of America B](#) **36**, 2 (2019)
- [2] **A.E. Hussein**, J. Ludwig, K. Behm, Y. Horovitz, P.-E. Masson-Laborde, C. Chvykov, A. Maksimchuk, T. Matsuoka, C. McGuffey, A.G.R. Thomas, W. Rozmus, V. Yanovsky, K. Krushelnick, *Stimulated Raman Backscatter from a laser wakefield accelerator*, [New Journal of Physics](#) **20** (2018)
- [1] **A.E. Hussein**, P. K. Diwakar, S.S. Harilal, A. Hassanein, *The effect of excitation laser wavelength on plasma generation and expansion of ablation plumes in air*, [Journal of Applied Physics](#) **113**, 143305 (2013)

CONFERENCE PROCEEDINGS

- [3] M. Stanfield, H. Allison, N. F. Beier, S. Hakimi, **A.E. Hussein**, F. Dollar, *Generating relativistic intensities via staged pulse compression in dielectric media*, [OSA High-brightness Sources and Light-driven Interactions Congress 2020 \(EUVXRAY, HILAS, MICS\) JM3A.2](#) (2020)
- [2] M. Stanfield, N. Beier, S. Hakimi, **A.E. Hussein**, F. Dollar, *Few cycle EUV continuum generation via thin film compression*, [Conference on Lasers and Electro-Optics](#) (2020)
- [1] R. Spesyvtsev, E. Brunetti, G. Vieux, M. Shahzad, A. Maitrallain, S. Yoffe, B. Ersfeld, A. Kornaszewski,

M. J. V. Streeter, O. Finlay, Y. Ma; B. Kettle, S. J. D. Dann, F. Albert, N. Bourgeois, S. Cipiccia, J. M. Cole, E. Gerstmayr, I. G. Gonzales, A. Higginbotham, **A. E. Hussein**, K. Falk, K. Krushelnick, N. Lemos, N. C. Lopes, C. Lumsdon, O. Lundh, S. P. D. Mangles, Z. Najmudin, P. P. Rajeev, M. Smid, D. R. Symes, A. G. R. Thomas, D. A. Jaroszynski, *Generation of electron high energy beams with a ring-like structure by a dual stage laser wakefield accelerator*, [Proceedings of SPIE 11036](#), 110360F-1 (2019)

SKILLS AND COMPETENCIES

Languages: English (native), French (professional)

Laboratory experience: Experience leading and collaborating with international teams of scientists on high-intensity laser plasma experiments performed on the following facilities:

- HERCULES laser, University of Michigan, USA
- OMEGA EP laser, Laboratory for Laser Energetics, University of Rochester, USA
- Gemini laser, Rutherford Appleton Laboratory, UK
- Trident laser, formerly at Los Alamos National Laboratory, USA
- ELFIE laser, Laboratoire pour l'Utilisation des Laser Intenses, France

Programming: Shell-script, MATLAB, Fortran, Python, Julia

Software: EPOCH, VisIt, AutoCAD, TRIM/SRIM, ImageJ, VisRad

TEACHING EXPERIENCE

Lecturer: [PPPL Introduction to Fusion Energy and Plasma Physics Course](#) June 2021

Course professor: [ECE 209: Fundamentals of Electrical Engineering](#) Winter 2021

Course assistant: [Michigan Math and Science Scholars](#) 06/2019

Course assistant for “The Physics of Magic and the Magic of Physics”, a two-week summer enrichment program for high school students offered by the University of Michigan.

Volunteer lecturer: [Code.org](#) 11/2016 - 07/2019

Developing and presenting an hour-long lecture and activity for middle-school aged children related to computer science and scientific programming, as well as my academic trajectory.

Volunteer tutor: [Washtenaw Literacy](#) 11/2016 - 07/2019

Weekly English as a Second Language group tutor, helping learners with speaking, listening, reading, writing and cultural understanding in Washtenaw County, MI, USA.

PROFESSIONAL SERVICE

Journal reviewer: Physical Review Letters, Physics of Plasmas, Plasma Physics and Controlled Fusion,

Nuclear Fusion, Journal of the Optical Sciences of America B, European Journal of Medical Physics, Nuclear Instruments and Methods A, Applied Radiation and Isotopes, High Power Laser Science and Engineering

Co-Founder: [COPHack](#) 2/2021 - Present
Initiated and co-lead the development of a UNFCC Conference of Parties Hack event for high school and university students at the UofA, in collaboration with the Sustainability Council, Kule Institute for Advanced Study, Speculative Energy Futures, Parkland Institute and the Energy Systems Signature Area.

Co-Chair: [LaserNetUS Users' Group](#) 3/2021 - Present
Elected to Co-Chair of the inaugural LaserNetUS Users' Group, supporting international teams of scientists conducting experiments on one of the 10 high-intensity laser facilities in North America. Responsibilities include forming the committee and developing by-laws.

Executive committee member: [Jupiter Laser Facility User Group](#) 2/2021 - Present
Elected to the User Group executive committee of the Jupiter Laser Facility at Lawrence Livermore National Laboratory, supporting international teams of scientists conducting on high-energy laser experiments at this facility.

Co-Director of Equity, Diversity, Inclusion and Decolonization [UofA Engineering](#)
1/2021 - Present
Co-Director of EDID for the department of Electrical and Computer Engineering at the University of Alberta. EDID directors from each department of engineering work together to maintain data on under represented groups in engineering and support equity, diversity, and inclusivity initiatives across the faculty.

Committee member: [APS Women+ in Plasma Physics](#) 1/2021 - Present
The American Physical Society (APS) committee on Women+ in Plasma Physics organizes events at the APS-DPP Annual Meeting to provide networking and discussion opportunities for women, identify challenges women face in the plasma physics community, and maintain data on women in plasma physics.

Faculty Advisor: [AlbertaSat](#) 09/2020 - Present
Faculty advisor for the AlbertaSat student team designing a multispectral imaging payload for monitoring wildfires, to be deployed on the Ex-Alt2 satellite in 2022.

Poster Judge: [UofA Dean's Research Award](#) 12/2020
Evaluated academic-style posters and video presentations of student research projects in the Faculty of Engineering.

Mentor: [Women in Scholarship, Engineering, Science and Technology \(WISEST\) SET Conference](#) 11/2020
Served as a mentor and prepared and conducted a virtual laboratory tour as part of the WISEST Science, Engineering and Technology conference for grade 10-12 women and gender minority students in Alberta.

Website Curator and Social Media Coordinator: [LaserNetUS](#) 10/2019 - Present
Website content curator and social media manager for the US Department of Energy LaserNetUS, working closely with Stanford University for oversight of media output.

United States National Science Foundation (NSF)

- NSF Science and Technology Centers, Virtual Site Visit panelist (2020)

- NSF/Department of Energy Partnership in Basic Plasma Science and Engineering, Ad hoc reviewer (2020)

Representative: UCI Committee on Inclusive Excellence 02/2020 - 06/2020
 Postdoctoral representative on the Department of Physics & Astronomy Inclusive Excellence committee.

Session chair: [APS Division of Plasma Physics Meeting](#) 10/2019
 Chair of the *Laser Wakefield and Direct Laser Acceleration* session at the 61st Annual Meeting of the APS Division of Plasma Physics, Fort Lauderdale, FL, USA.

Mentor: [Big Brothers Big Sisters](#) 09/2010 - 07/2019
 Mentor to youth facing adversity in Montréal, Canada (2010-13), Lafayette, IN, USA (2013-2015), and Ann Arbor, MI, USA (2016 - 2019).

Video interviewer: [MiPlasma Educational Outreach Videos](#) 09/2018 - 03/2019
 Conducted interviews of Michigan Institute of Plasma Science and Engineering (MIPSE) seminar speakers. Videos are archived online.

Invited mentor: [University of Michigan INNOVATE competition](#) 01/2018 - 03/2018
 Invited to mentor a team of students involved in the public service pitch competition hosted by the University of Michigan Central Student Government. Led a training session on writing grant proposals.

Volunteer coach: [Girls on the Run of Southeastern Michigan](#) 02/2017 - 05/2017
 Weekly volunteer coach delivering curriculum promoting positive emotional, social, mental and physical development to groups of 6th-8th grade girls.

Session Chair: [University of Michigan Engineering Graduate Symposium](#) 06/2016 - 11/2016
 Session Chair for Applied Electromagnetics and Plasma Science Session, Symposium Judge Recruiter.

Member: [University of Michigan Women in Science and Engineering \(WISE\)](#)

- Lecturer: Girls In Science and Engineering (WISE-GISE) Summer Camp (Optics) 06/2016
- Panelist: Applying to Graduate School 11/2015

University Student Council

2014/15	Purdue University	Nuclear Engineering Graduate Organization, VP External
2012/13	McGill University	Academic Events Committee, Liaison to Physical Sciences
2012/13	McGill University	Undergraduate Research Ambassador
2010/11	McGill University	VP Finance, Neuroscience Undergraduates of McGill
2009/10	McGill University	VP Internal, Neuroscience Undergraduates of McGill

Invited Panelist: [DOCTalks Symposium](#) 02/2013
 Invited panelist to discuss the documentary *Boxing Girls of Kabul* screened by the University of New Brunswick Department of Women's Studies.

Volunteer: Royal Victoria Hospital, Montréal, Canada 09/2008 - 01/2011
 "Friendly visitor" providing company to patients in the Montréal Neurological Hospital as a weekly volunteer.

PRESENTATIONS

INVITED TALKS & SEMINARS

Upcoming:

[13] X-ray production using relativistically intense laser pulses, Canadian Association of Physicists, Division of Plasma Physics Symposium, Virtual, June 6-11 2021

[12] Laser-wakefield accelerators for high-resolution X-ray imaging of complex microstructures, International High Power Laser Ablation Conference, Virtual, April 12-15 2021

[11] Laser-wakefield accelerators for high-resolution, time-resolved probing of complex matter, 2020 Sino-Canadian Bilateral Workshop, Remote, November 25-27 2020

[10] Optimizing Direct Laser Acceleration, The 61st Annual Meeting of the APS Division of Plasma Physics, Fort Lauderdale, FL, USA, October 21-25 2019

[9] Optimizing Direct Laser Acceleration, The 46th European Physical Society Conference on Plasma Physics, Milan, Italy, July 8th - 12th 2019

[8] New frontiers in laser-plasma interactions: from fundamental physics to high-resolution diagnostics, UC Irvine Plasma Physics Special Seminar, June 20, 2019

[7] Laser wakefield accelerators as a broadband radiation source - from infrared to X-rays, University of Alberta Department of Electrical and Computer Engineering Research Seminar, Alberta, Canada, April 29th, 2019

[6] Exploring electron and radiation production using femtosecond and picosecond laser pulses, UC Irvine Plasma Physics Seminar Series, February 19, 2019

[5] Exploring electron and radiation production using femtosecond and picosecond laser pulses, University of Rochester Laboratory for Laser Energetics Research Seminar, Rochester, NY, USA, September 24, 2018

[4] The role of plasma density in the generation of high energy, low divergence electron beams, US-Japan Workshop Theory and Simulations of High-Field and High Energy Density Physics, Hiroshima, Japan, March 2018

[3] Influence of plasma density on the generation of 100s MeV electrons via Direct Laser Acceleration, US-Japan Workshop on Laser-Plasma Interactions and High Energy Density Physics, General Atomics, San Diego, CA, December 2017

[2] The role of hot electrons in the creation of hollow atoms by relativistic laser-plasma interaction, Lawrence Berkeley National Lab, Berkeley Lab Laser Accelerator Center, Berkeley, CA, USA, April 2016

[1] Experimental and computational analysis of ultra-short laser-matter interactions, Argonne National Lab, Advanced Photon Source, Time Resolved Research Group, Lemont, IL, USA, March 2015

CONTRIBUTED TALKS & POSTERS

(As presenter only)

[33] **Talk: A.E. Hussein**, *The role of hot electrons in the generation of anomalous X-ray spectra from ultra-intense laser-plasma interactions*, 62th Annual Meeting of the APS Division of Plasma Physics, Remote, November 2020

[32] **Flash talk: A.E. Hussein**, *Applications of plasma-based betatron radiation*, American Physical Society Division of Particles and Fields Particle Physics Community Planning Exercise (Snowmass), October 2020

[31] **Poster: A.E. Hussein**, A.V. Arefiev, F. Dollar, Z. Gong, Y. Ma, T. Wang, K. Weichman, L. Willingale, *The effect of pulse duration on the generation of high-charge, high-average energy electron beams via Direct Laser Acceleration*, NIF and JLF User Group Meeting, Lawrence Livermore National Lab, CA, USA, February 2020

[30] **Poster: A.E. Hussein**, J. Ludwig, W. Rozmus, Y. Ma, P-E. Masson-Laborde, J. Nees, A. Maksimchuk, J. Hinojosa, E. Peterson, A. Thomas, K. Krushelnick, *Measurements of mid-infrared radiation from a laser wakefield accelerator*, 61th Annual Meeting of the APS Division of Plasma Physics, Fort Lauderdale, FL, USA, October 2019

[29] **Talk: A.E. Hussein**, N. Senabulya, Y. Ma, M.J.V. Streeter, B. Kettle, S.J.D. Dann, J.M. Cole, F. Albert, N. Bourgeois, S. Cipiccia, O. Finlay, E. Gerstmayr, I. Gallardo González, A. Higginbotham, D.A. Jaroszynski, K. Falk, K. Krushelnick, N. Lemos, N.C. Lopes, C. Lumsden, O. Lundh, S.P.D. Mangles, Z. Najmudin, P.P. Rajeev, M. Shahzad, M. Smid, R. Spesyvtsev, M.J.V. Streeter, D.R. Symes, G. Vieux, J. C. Wood, A.J. Shahani and A.G.R. Thomas, *Laser-wakefield accelerators for high-resolution X-ray imaging of complex microstructures*, 4th European Advanced Accelerator Concepts Workshop, Isola d'Elba, Italy, September 2019

[28] **Poster: A.E. Hussein**, N. Senabulya, Y. Ma, M.J.V. Streeter, B. Kettle, S.J.D. Dann, J.M. Cole, F. Albert, N. Bourgeois, S. Cipiccia, O. Finlay, E. Gerstmayr, I. Gallardo González, A. Higginbotham, D.A. Jaroszynski, K. Falk, K. Krushelnick, N. Lemos, N.C. Lopes, C. Lumsden, O. Lundh, S.P.D. Mangles, Z. Najmudin, P.P. Rajeev, M. Shahzad, M. Smid, R. Spesyvtsev, M.J.V. Streeter, D.R. Symes, G. Vieux, J. C. Wood, A.J. Shahani and A.G.R. Thomas, *Laser-wakefield accelerators for high-resolution X-ray imaging of complex microstructures*, Michigan Institute of Plasma Sciences and Engineering, Ann Arbor, MI, USA, November 2018

**Best Poster Award*

[27] **Talk: A.E. Hussein**, Y. Ma, J. Hinojosa, J. Nees, A. Maksimchuk, A.G.R. Thomas, K. Krushelnick, *Spectral measurements of mid-infrared radiation from a laser wakefield accelerator*, 60th Annual Meeting of the APS Division of Plasma Physics, Portland, OR, USA, November 2018

[26] **Poster: A.E. Hussein**, N. Senabulya, Y. Ma, M.J.V. Streeter, B. Kettle, S.J.D. Dann, J.M. Cole, F. Albert, N. Bourgeois, S. Cipiccia, O. Finlay, E. Gerstmayr, I.G. González, A. Higginbotham, D.A. Jaroszynski, K. Falk, K. Krushelnick, N. Lemos, N.C. Lopes, C. Lumsden, O. Lundh, S.P.D. Mangles, Z. Najmudin, P.P. Rajeev, M. Shahzad, M. Smid, R. Spesyvtsev, M.J.V. Streeter, D.R. Symes, G. Vieux, J. C. Wood, A.J. Shahani and A.G.R. Thomas, *Laser-wakefield accelerators for high-resolution X-ray imaging of complex microstructures*, University of Michigan Engineering Graduate Symposium, Ann Arbor, MI, USA, October 2018

**Peer reviewed*

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