

Howard M. Milchberg

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B.Eng. (1979, Engineering Physics), McMaster University; Ph.D. (1985, Astrophysical Sciences), Princeton University; AT&T Bell Laboratories (1985-87); Assistant Prof.(1988-1993), Assoc. Prof. (1993-95), Professor (1995-present) Univ. of Maryland; NSERC Postgraduate Fellowship, National Research Council of Canada (1979-84); NSF Presidential Young Investigator (1988-93); APS-DPP Doctoral Dissertation (Rosenbluth) Award to students Thomas Clark (1999), Kiyong Kim (2004), and Yu-hsin Chen (2012); Fellow American Physical Society; Fellow, Optical Society of America; University of Maryland Distinguished Scholar-Teacher (2005); APS Award for Excellence in Plasma Physics Research (2005), A. James Clark School of Engineering Faculty Outstanding Research Award (2016), APS Outstanding Referee (2019).

Research interests

nonlinear optics, laser and optical physics, interaction of intense electromagnetic fields with atoms, ions, gases, solids, and plasmas; generation and application of coherent and incoherent short wavelength radiation, laser-based acceleration of charged particles.

Some recent publications

Measurement of ultralow radiation-induced charge densities using picosecond mid-IR laser-induced breakdown

D. Woodbury, R. M. Schwartz, and H. M. Milchberg

Optica **6**, 811 (2019)

Remote detection of radioactive material using mid-IR laser-driven electron avalanche

R. M. Schwartz, D. Woodbury, J. Isaacs, P. Sprangle, and H. M. Milchberg

Science Advances **5**, eaav6804 (2019)

Controlling femtosecond filament propagation using externally-driven gas motion

J. K. Wahlstrand, N. Jhajj, and H. M. Milchberg

Opt. Lett. **44**, 199 (2019)

Ultrashort infrared 2.5 –11 μ m pulses: spatiotemporal profiles and absolute nonlinear response of air constituents

Sina Zahedpour, S. Hancock, and H.M. Milchberg

Opt. Lett. **44**, 843 (2019)

Coherent ultra-broadband laser-assisted injection radiation from a laser plasma accelerator

B. Miao, L. Feder, J. Elle, A. J. Goers, F. Salehi, J.K. Wahlstrand, and H. M. Milchberg

Phys. Rev. E **98**, 043206 (2018)

Bound-Electron Nonlinearity Beyond the Ionization Threshold

J. K. Wahlstrand, S. Zahedpour, A. Bahl, M. Kolesik, and H. M. Milchberg

Phys. Rev. Lett. **120**, 183901 (2018)

Laser wakefield acceleration with mid-IR laser pulses

D. Woodbury, L. Feder, V. Shumakova, C. Gollner, R. Schwartz, B. Miao, F. Salehi, A. Korolov, A. Pugžlys, A. Baltuška, and H.M. Milchberg

Opt. Lett. **43**, 1131 (2018)

MeV electron acceleration at 1 kHz with <10 mJ laser pulses

F. Salehi, A.J. Goers, G.A. Hine, L. Feder, D. Kuk, K.Y. Kim, and H.M. Milchberg

Opt. Lett. **42**, 215 (2017)

Nonlinear optical polarization response and plasma generation in noble gases: Comparison of metastable-electronic-state-approach models to experiments

A. Bahl, J.K. Wahlstrand, S. Zahedpour, H. M. Milchberg, and M. Kolesik

Phys. Rev. A **96**, 043867 (2017)

Spatio-temporal optical vortices

N. Jhajj, I. Larkin, E.W. Rosenthal, S. Zahedpour, J. K. Wahlstrand, and H. M. Milchberg
Phys. Rev. X **6**, 031037 (2016)

Measurement of the nonlinear refractive index of air constituents at mid-infrared wavelengths

S. Zahedpour, J. K. Wahlstrand, and H. M. Milchberg
Opt. Lett. **40**, 5794 (2015)

Absolute measurement of the ultrafast nonlinear electronic and rovibrational response in H_2 and D_2

J. K. Wahlstrand, S. Zahedpour, Y.-H. Cheng, J. P. Palastro, and H. M. Milchberg
Phys. Rev. A **92**, 063828 (2015)