

Stanford



Kirk Larsen

Associate Scientist, SLAC National Accelerator Laboratory

Bio

BIO

I am an associate staff scientist in the Laser Science Department of the Linac Coherent Light Source (LCLS) at SLAC National Accelerator Laboratory. I work on developing tunable few-cycle UV light sources using soliton dynamics and resonant dispersive wave emission in hollow core fibers. I am involved in photoinjector research for LCLS-II, focusing on temporal x-ray pulse shaping to support the extension of attosecond capabilities to high repetition rate. I also work on developing plasma based attosecond XUV light sources at FACET-II.

EDUCATION AND CERTIFICATIONS

- BS, University of Oregon (2014)
- PhD, University of California, Berkeley (2020)

LINKS

- Google Scholar: <https://scholar.google.com/citations?user=O9o-7K0AAAAJ&hl=en&oi=ao>

Publications

PUBLICATIONS

- **Tracking ultrafast non-adiabatic dissociation dynamics of the deuterated water dication molecule.** *The Journal of chemical physics*
Iskandar, W., Rescigno, T. N., Orel, A. E., Larsen, K. A., Severt, T., Streeter, Z. L., Jochim, B., Griffin, B., Call, D., Davis, V., McCurdy, C. W., Lucchese, R. R., Williams, et al
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- **Wavelength scaling and multicolor operation of a plasma-driven attosecond x-ray source via harmonic generation** *PHYSICAL REVIEW ACCELERATORS AND BEAMS*
Hessami, R., Morgan, J., Robles, R., Larsen, K. A., Marinelli, A., Emma, C.
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- **Terawatt-scale attosecond X-ray pulses from a cascaded superradiant free-electron laser** *NATURE PHOTONICS*
Franz, P., Li, S., Driver, T., Robles, R. R., Cesar, D., Isele, E., Guo, Z., Wang, J., Duris, J. P., Larsen, K., Glowonia, J. M., Cheng, X., Hoffmann, et al
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- **Experimental demonstration of attosecond pump-probe spectroscopy with an X-ray free-electron laser** *NATURE PHOTONICS*
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- **Attosecond-pump attosecond-probe x-ray spectroscopy of liquid water.** *Science (New York, N.Y.)*
Li, S., Lu, L., Bhattacharyya, S., Pearce, C., Li, K., Nienhuis, E. T., Doumy, G., Schaller, R. D., Moeller, S., Lin, M. F., Dakovski, G., Hoffman, D. J., Garratt, et al
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- **Compact single-shot soft X-ray photon spectrometer for free-electron laser diagnostics** *OPTICS EXPRESS*
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- **Efficiency of charge transfer in changing the dissociation dynamics of OD⁺ transients formed after the photo-fragmentation of D₂⁺** *JOURNAL OF CHEMICAL PHYSICS*
Iskandar, W., Rescigno, T. N., Orel, A. E., Severt, T., Larsen, K. A., Streeter, Z. L., Jochim, B., Griffin, B., Call, D., Davis, V., Mccurdy, C. W., Lucchese, R. R., Williams, et al
2023; 159 (9)
- **Strongly coupled intermediate electronic states in one-color two-photon single valence ionization of O₂**. *The Journal of chemical physics*
Larsen, K. A., Bello, R. Y., Lucchese, R. R., McCurdy, C. W., Slaughter, D. S., Weber, T.
2023; 158 (2): 024303
- **Step-by-step state-selective tracking of fragmentation dynamics of water dications by momentum imaging**. *Nature communications*
Severt, T., Streeter, Z. L., Iskandar, W., Larsen, K. A., Gatton, A., Trabert, D., Jochim, B., Griffin, B., Champenois, E. G., Brister, M. M., Reedy, D., Call, D., Strom, et al
2022; 13 (1): 5146
- **Mechanisms and dynamics of the NH₂⁺ + H⁺ and NH₃⁺ + H⁺ + H fragmentation channels upon single-photon double ionization of NH₃** *JOURNAL OF PHYSICS B-ATOMIC MOLECULAR AND OPTICAL PHYSICS*
Larsen, K. A., Rescigno, T. N., Streeter, Z. L., Iskandar, W., Heck, S., Gatton, A., Champenois, E. G., Severt, T., Strom, R., Jochim, B., Reedy, D., Call, D., Moshhammer, et al
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- **Role of dipole-forbidden autoionizing resonances in nonresonant one-color two-photon single ionization of N₂** *PHYSICAL REVIEW A*
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- **Photoelectron and fragmentation dynamics of the H⁺** *PHYSICAL REVIEW RESEARCH*
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- **Distinguishing resonance symmetries with energy-resolved photoion angular distributions from ion-pair formation in O₂ following two-photon absorption of a 9.3 eV femtosecond pulse** *JOURNAL OF CHEMICAL PHYSICS*
Larsen, K. A., Lucchese, R. R., Slaughter, D. S., Weber, T.
2020; 153 (2): 021103
- **Angle-resolved nonresonant two-photon single ionization of argon using 9.3-eV photons produced via high-order harmonic generation** *PHYSICAL REVIEW A*
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- **Symmetry breaking in the body-fixed electron emission pattern due to electron-retroaction in the photodissociation of H₂⁽⁺⁾ and D₂⁽⁺⁾ close to threshold** *PHYSICAL REVIEW RESEARCH*
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- **Tracing intermolecular Coulombic decay of carbon-dioxide dimers and oxygen dimers after valence photoionization** *PHYSICAL REVIEW A*
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- **Ultrafast photodissociation dynamics and nonadiabatic coupling between excited electronic states of methanol probed by time-resolved photoelectron spectroscopy** *JOURNAL OF CHEMICAL PHYSICS*
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- **Ultrafast photodissociation dynamics and nonadiabatic coupling between excited electronic states of methanol probed by time-resolved photoelectron spectroscopy**. *The Journal of chemical physics*

Champenois, E. G., Greenman, L., Shivaram, N., Cryan, J. P., Larsen, K. A., Rescigno, T. N., McCurdy, C. W., Belkacem, A., Slaughter, D. S.
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● **Resonance signatures in the body-frame valence photoionization of CF₄** *PHYSICAL CHEMISTRY CHEMICAL PHYSICS*

Larsen, K. A., Trevisan, C. S., Lucchese, R. R., Heck, S., Iskandar, W., Champenois, E., Gatton, A., Moshhammer, R., Strom, R., Severt, T., Jochim, B., Reedy, D., Weller, et al
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● **VUV and XUV reflectance of optically coated mirrors for selection of high harmonics** *OPTICS EXPRESS*

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