

Stanford

Tor Raubenheimer

Professor of Particle Physics and Astrophysics

Bio

ACADEMIC APPOINTMENTS

- Professor, Particle Physics and Astrophysics

Teaching

COURSES

2021-22

- Accelerators and Beams: Tools of Discovery and Innovation: PHYSICS 155 (Spr)

2020-21

- Accelerators and Beams: Tools of Discovery and Innovation: PHYSICS 155 (Spr)

STANFORD ADVISEES

Orals Evaluator

James Allen

Publications

PUBLICATIONS

- **Two-stage reflective self-seeding scheme for high-repetition-rate X-ray free-electron lasers.** *Journal of synchrotron radiation* Zhou, G., Qu, Z., Ma, Y., Corbett, W. J., Jiao, Y., Li, H., Qin, W., Raubenheimer, T. O., Tsai, C. Y., Wang, J., Yang, C., Wu, J. 2021; 28 (Pt 1): 44–51
- **Coherence time characterization method for hard X-ray free-electron lasers** *OPTICS EXPRESS* Zhou, G., Jiao, Y., Raubenheimer, T. O., Wang, J., Holman, A. J., Tsai, C., Wu, J. Y., Wu, W., Yang, C., Yoon, M., Wu, J. 2020; 28 (8): 10928–38
- **Attosecond Coherence Time Characterization in Hard X-Ray Free-Electron Laser.** *Scientific reports* Zhou, G., Decker, F., Ding, Y., Jiao, Y., Lutman, A. A., Maxwell, T. J., Raubenheimer, T. O., Wang, J., Holman, A. J., Tsai, C., Wu, J. Y., Wu, W., Yang, et al 2020; 10 (1): 5961
- **Fluid dynamics analysis of a gas attenuator for X-ray FELs under high-repetition-rate operation** *JOURNAL OF SYNCHROTRON RADIATION* Yang, B., Wu, J., Raubenheimer, T. O., Feng, Y. 2017; 24: 547–559
- **Multi-dimensional optimization of a terawatt seeded tapered Free Electron Laser with a Multi-Objective Genetic Algorithm** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT* Wu, J., Hu, N., Setiawan, H., Huang, X., Raubenheimer, T. O., Jiao, Y., Yu, G., Mandlekar, A., Spampinati, S., Fang, K., Chu, C., Qiang, J. 2017; 846: 56–63
- **Method to generate a pulse train of few-cycle coherent radiation** *PHYSICAL REVIEW ACCELERATORS AND BEAMS* Garcia, B., Hemsing, E., Raubenheimer, T., Campbell, L. T., McNeil, B. W.

2016; 19 (9)

- **Staging optics considerations for a plasma wakefield acceleration linear collider** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT*

Lindstrom, C. A., Adli, E., Allen, J. M., Delahaye, J. P., Hogan, M. J., Joshi, C., Muggli, P., Raubenheimer, T. O., Yakimenko, V.

2016; 829: 224-228

- **Echo-enabled harmonics up to the 75th order from precisely tailored electron beams** *NATURE PHOTONICS*

Hemsing, E., Dunning, M., Garcia, B., Hast, C., Raubenheimer, T., Stupakov, G., Xiang, D.

2016; 10 (8): 512-?

- **Two-photon photoemission from a copper cathode in an X-band photoinjector** *PHYSICAL REVIEW ACCELERATORS AND BEAMS*

Li, H., Limborg-Deprey, C., Adolphsen, C., McCormick, D., Dunning, M., Jobe, K., Raubenheimer, T., Vrieling, A., Vecchione, T., Wang, F., Weathersby, S.

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- **Filamentation effect in a gas attenuator for high-repetition-rate X-ray FELs** *JOURNAL OF SYNCHROTRON RADIATION*

Feng, Y., Krzywinski, J., Schafer, D. W., Ortiz, E., Rowen, M., Raubenheimer, T. O.

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- **Measurements and analysis of a high-brightness electron beam collimated in a magnetic bunch compressor** *PHYSICAL REVIEW SPECIAL TOPICS-ACCELERATORS AND BEAMS*

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- **Femtosecond Visualization of Laser-Induced Optical Relativistic Electron Microbunches** *PHYSICAL REVIEW LETTERS*

Xiang, D., Hemsing, E., Dunning, M., Hast, C., Raubenheimer, T.

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- **First Characterization of Coherent Optical Vortices from Harmonic Undulator Radiation** *PHYSICAL REVIEW LETTERS*

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Hemsing, E., Dunning, M., Hast, C., Raubenheimer, T., Xiang, D.

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- **Highly coherent vacuum ultraviolet radiation at the 15th harmonic with echo-enabled harmonic generation technique** *PHYSICAL REVIEW SPECIAL TOPICS-ACCELERATORS AND BEAMS*

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- **Direct observation of fine-scale energy banding in echo-enabled harmonic generation** *PHYSICAL REVIEW SPECIAL TOPICS-ACCELERATORS AND BEAMS*

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Wang, L., Safranek, J., Cai, Y., Corbett, J., Hettel, R. O., Raubenheimer, T. O., Schmerge, J., Sebek, J.

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- **Demonstration of Cascaded Optical Inverse Free-Electron Laser Accelerator** *PHYSICAL REVIEW LETTERS*

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- **Modeling and design of an X-band rf photoinjector** *PHYSICAL REVIEW SPECIAL TOPICS-ACCELERATORS AND BEAMS*
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- **Generating periodic terahertz structures in a relativistic electron beam through frequency down-conversion of optical lasers** *PHYSICAL REVIEW LETTERS*
Dunning, M., Hast, C., Hemsing, E., Jobe, K., McCormick, D., Nelson, J., Raubenheimer, T. O., Soong, K., Szalata, Z., Walz, D., Weathersby, S., Xiang, D.
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- **Mode-locked multichromatic x rays in a seeded free-electron laser for single-shot x-ray spectroscopy** *PHYSICAL REVIEW SPECIAL TOPICS-ACCELERATORS AND BEAMS*
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- **All-optical time-resolved measurement of laser energy modulation in a relativistic electron beam** *PHYSICAL REVIEW SPECIAL TOPICS-ACCELERATORS AND BEAMS*
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- **Experimental observations of in situ secondary electron yield reduction in the PEP-II particle accelerator beam line** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT*
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- **Observation of magnetic resonances in electron clouds in a positron storage ring** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT*
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- **Present status and first results of the final focus beam line at the KEK Accelerator Test Facility** *PHYSICAL REVIEW SPECIAL TOPICS-ACCELERATORS AND BEAMS*
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- **Sharp reduction of the secondary electron emission yield from grooved surfaces** *JOURNAL OF APPLIED PHYSICS*

- Pivi, M., King, F. K., Kirby, R. E., Raubenheimer, T. O., Stupakov, G., Le Pimpec, F.
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Pivi, M., Collet, G., King, F., Kirby, R., Markiewicz, T., Raubenheimer, T., Seeman, J., Wang, L., Le Pimpec, F.
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 - **Luminosity, energy and polarization studies for the Linear Collider: Comparing e(+)-e(-) and e(-)-e(-) for NLC and TESLA** *5th International Workshop on Electron-Electron Interactions at TeV Energies*
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 - **Single-bunch instability driven by the electron cloud effect in the positron damping ring of the International Linear Collider** *2005 IEEE PARTICLE ACCELERATOR CONFERENCE (PAC), VOLS 1-4*
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 - **Proposal of the next incarnation of accelerator test facility at KEK for the international linear collider** *2005 IEEE PARTICLE ACCELERATOR CONFERENCE (PAC), VOLS 1-4*
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 - **Luminosity optimization with offset, crossing angle, and distortion** *21st Particle Accelerator Conference (PAC)*
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 - **Luminosity loss due to beam distortion and the beam-beam instability** *21st Particle Accelerator Conference (PAC)*
Wu, J. H., Raubenheimer, T. O., Chao, A. O., Seryi, A., Sramek, C. K.
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- **Comparison of the TESLA, NLC and CLIC beam-collimation system performance** *29th ICFA Advanced Beam Dynamics Workshop on Beam Halo Dynamics, Diagnostics, and Collimation held in Conjunction with Workshop on Beam-Beam Interactions*

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- **A lattice with larger momentum compaction for the NLC main damping rings** *20th Biennial Particle Accelerator Conference*

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- **Impact of the wiggler coherent synchrotron radiation impedance on the beam instability** *20th Biennial Particle Accelerator Conference*

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 - **Optimized wakefield suppression & emittance dilution-imposed alignment tolerances in X-band accelerating structures for the JLC/NLC** *20th Biennial Particle Accelerator Conference*
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 - **Evaluation of vertical emittance in KEK-ATF by utilizing lifetime measurement** *International Symposium on New Visions in Laser-Beam Interactions*
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 - **Scaling laws for e(+)e(-) linear colliders** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT*
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● **Beam dynamics in plasma accelerators *Workshop on Nonlinear and Collective Phenomena in Beam Physics***

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● **A technique of measuring and correcting emittance dilutions due to accelerator structure misalignments *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT***

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● **Collective effects in the NLC damping ring designs *16th Biennial Particle Accelerator Conference***

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