Stanford

Gilliss Dyer

Lead Scientist, SLAC National Accelerator Laboratory

Bio

BIO

Born and raised on Kauai, I studied Mathematics and Physics at New College of Florida and received my bachelor's degree in 2000. I did my graduate work at the University of Texas at Austin, studying high intensity laser plasma science. After receiving my PhD in 2007 I stayed at UT and joined the Center for High Energy Density Laser Science, as a postdoctoral researcher and scientist, heading the experimental systems of the Texas Petawatt Laser. During this time I also worked at National Energetics designing and building commercial high power laser systems. Inspired by the revolutionary potential of hard X-ray FELs in the field of HED plasma physics I joined LCLS as the MEC department head in 2017.

CURRENT ROLE AT STANFORD

I am a Lead Scientist and Department Head of Matter In Extreme Conditions in the Science, Research, and Development division of LCLS. I was Chief Scientist of the MEC-U project, currently paused.

EDUCATION AND CERTIFICATIONS

- PhD, The University of Texas at Austin , Physics (2007)
- BA, New College of Florida , Physics and Mathematics (2000)

LINKS

- MEC Science Department: https://lcls.slac.stanford.edu/depts/mec
- Matter in Extreme Conditions Instrument: https://lcls.slac.stanford.edu/instruments/mec

Publications

PUBLICATIONS

- **Time-resolved X-ray imaging of the current filamentation instability in solid-density plasmas.** *Nature communications*
  Schoenwaelder, C., Marret, A., Assenbaum, S., Curry, C. B., Cunningham, E., Dyer, G., Funk, S., Glenn, G. D., Goede, S., Khaghani, D., Rehwald, M., Schramm, U., Treffert, et al
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- **Multi-messenger dynamic imaging of laser-driven shocks in water using a plasma wakefield accelerator.** *Nature communications*
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- **Observation of a mixed close-packed structure in superionic water.** *Nature communications*
  Andriambariarijaona, L., Stevenson, M. G., Bethkenhagen, M., Lecherbourg, L., Lefèvre, F., Vinci, T., Appel, K., Baehtz, C., Benuzzi-Mounaix, A., Bergermann, A., Bespalov, D., Brambrink, E., Cowan, et al

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- **Characterizing laser-heated polymer foams with simultaneous x-ray fluorescence spectroscopy and Thomson scattering at the Matter in Extreme Conditions Endstation at LCLS** *PHYSICS OF PLASMAS*
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- **X-ray microscopy and talbot imaging with the matter in extreme conditions X-ray imager at LCLS.** *Scientific reports*
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- **A scintillator attenuation spectrometer for intense gamma-rays** *REVIEW OF SCIENTIFIC INSTRUMENTS*
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- **Experiments and simulations of isochorically heated warm dense carbon foam at the Texas Petawatt Laser** *MATTER AND RADIATION AT EXTREMES*
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- **Ronchi shearing interferometry for wavefronts with circular symmetry** *JOURNAL OF SYNCHROTRON RADIATION*
  Nagler, B., Galtier, E. C., Brown, S. B., Heimann, P., Dyer, G., Lee, H.
  2020; 27: 1461–69

- **Laser-plasmas in the relativistic-transparency regime: Science and applications**
  Fernandez, J. C., Gautier, D., Huang, C., Palaniyappan, S., Albright, B. J., Bang, W., Dyer, G., Favalli, A., Hunter, J. F., Mendez, J., Roth, M., Swinhoe, M., Bradley, et al
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- **Diagnostics improvement in the ABC facility and preliminary tests on laser interaction with light-atom clusters and p+B-11 targets**
  Consoli, F., De Angelis, R., Andreoli, P., Cristofari, G., Di Giorgio, G., Bonasera, A., Barbui, M., Mazzocco, M., Bang, W., Dyer, G., Quevedo, H., Hagel, K., Schmidt, et al
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- **Hot electron production using the Texas Petawatt Laser irradiating thick gold targets** *HIGH ENERGY DENSITY PHYSICS*
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- **Study of the yield of D-D, D-He-3 fusion reactions produced by the interaction of intense ultrafast laser pulses with molecular clusters**
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- **The Texas Petawatt Laser and Current Experiments**
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  edited by Zgadzaj, R., Gaul, E., Downer, M. C.
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- **Demonstration of a 1.1 petawatt laser based on a hybrid optical parametric chirped pulse amplification/mixed Nd:glass amplifier** *APPLIED OPTICS*
  Gaul, E. W., Martinez, M., Blakeney, J., Jochmann, A., Ringuette, M., Hammond, D., Borger, T., Escamilla, R., Douglas, S., Henderson, W., Dyer, G., Erlandson, A., Cross, et al
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