

Workshop on Fiber Optic Distributed Acoustic Sensing (DAS) for Infrastructure Engineering and Subsurface Imaging

Organized by:

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Peter Hubbard, Ph.D. Candidate; *University of California, Berkeley*

Kenichi Soga; Ph.D.; *Chancellor's Professor, University of California, Berkeley*

Richard Costley; Ph.D.; *Research Mechanical Engineer, USACE – ERDC*

John Murphy; *Research Civil Engineer, USACE - ERDC*

LSU Center for River Studies, Baton Rouge, LA; October 21-22, 2021



Day 1 Schedule – Part 1

Thursday, 21 October 2021 (Note: all times are in Central U.S. Time Zone)

Zoom link for remote participation: <https://DesignSafe-ci.zoom.us/j/98453342421>

9:00 – 9:10am **Welcome to the DAS Workshop and to the Center for River Studies**

Dr. Brady Cox – Professor, Utah State University and NHERI@UTexas Co-PI

Dr. Clint Willson – Professor, Louisiana State University and Director of the Center for River Studies

9:10 – 9:30am **NSF’s NHERI@UTexas Shared-Use Equipment Facility**

1 Dr. Brady Cox – Professor, Utah State University and NHERI@UTexas Co-PI

9:30 – 9:50am **Introduction to Distributed Fiber Optic Sensing (DFOS) with Case Studies**

2 Dr. Kenichi Soga – Chancellor’s Professor, University of California, Berkeley

9:50 – 10:05am **Distributed Acoustic Sensing (DAS): Principles and Engineering Case Studies**

3 Dr. Dante Fratta – Associate Professor, University of Wisconsin-Madison

10:05 – 10:25am **DAS for Infrastructure Engineering Applications**

4 Peter Hubbard – Ph.D. Candidate, University of California, Berkeley

10:25 – 10:45am **Break**

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Day 1 Schedule – Part 2

Schedule Change

10:45 – 11:00am

2:45 – 3:00pm

Well-based DAS for Reservoir Flow Monitoring

5 Dr. Jyotsna Sharma – Assistant Professor, Louisiana State University

11:00 – 11:15am

DAS Imaging of Imperial Valley using Dark Fiber and Noise for Geothermal

6 Dr. Jonathan Ajo-Franklin – Professor, Rice University

11:15 – 11:30am

DAS using FEBUS A1: A Large Diversity of Fields to Monitor, from Tensioning Cable to Ice Cover

7

Vincent Lanticq – Co-Founder and Technical Manager, Febus Optics

11:30 – 11:45am

Distributed Sensing for Embankment Dam Monitoring

8 Agatha Podrasky (Project Scientist), Thomas Coleman (General Manager), Carlos Maldaner (Senior Project Scientist) – Silixa LLC

11:45 – 12:00pm

Fiber-optic Sensing for Integrity Monitoring of Near-surface Earth Structures

9 Todd Bown (Regional Technical Manager) – OptaSense

12:00 – 1:00pm

Lunch Break and Tour of Center for River Studies

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Day 1 Schedule – Part 3

- 1:00 – 1:15pm** **DAS Fiber Installation Considerations**
10 Dr. Meghan Quinn – Research Geotechnical Engineer, CRREL, ERDC, USACE
- 1:15 – 1:30pm** **DAS in the Real World**
11 Dr. Jennifer Picucci – Senior Research Mathematician, ERDC, UASCE
- 1:30 – 1:45pm** **Applications of Ocean-bottom DAS for Offshore Engineering and Hazard**
12 Ethan Williams – Ph.D. Candidate, California Institute of Technology
- 1:45 – 2:00pm** **DAS for Extracting High-resolution, Multi-mode Surface Wave Dispersion Data**
13 Joseph Vantassel – Ph.D. Candidate, University of Texas
- 2:00 – 2:15pm** **Data Science Approaches in DAS**
14 Dr. Eileen Martin – Assistant Professor. Colorado School of Mines
- 2:15 – 2:30pm** **Break**
- No video recorded as requested by the presentors

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Day 1 Schedule – Part 4

2:30 – 2:45pm **DAS for Well Production Management**

15 Dmitry Kortukov – Data Analytics Champion, Schlumberger

Schedule Change

2:45 – 3:00pm **Updates from the CTEMPS Shared-use DFOS Facility and the DAS Research Coordinating Network (RCN)**

16 Dr. Scott Tyler – Professor, University of Nevada Reno and CTEMPS Co-Director

Background Information for DAS field demonstration on the Blackhawk Levee

3:00 – 3:10pm **Motivation for Mississippi River Levee Research within the USACE**

17 James Lewis – US Army Corps of Engineers (USACE)

3:10 – 3:20pm **Performance of Mississippi River Levees Following the 2011 Flood Event**

18 Dr. Robert Gilbert – Professor and CAEE Department Chair, University of Texas

3:20 – 3:35pm **Blackhawk, Levee Safety Emergency Averted**

19 Brian Jordan – Analytical & Levee Safety Section Chief, Vicksburg District, USACE

3:35 – 3:50pm **Distributed Fiber Optic Sensing at the Blackhawk Levee Site**

20 Dr. Richard Costley – Research Mechanical Engineer, ERDC, USACE
John Murphy – Research Civil Engineer, ERDC, USACE

3:50 – 4:00pm **Logistical Information for DAS Field Demonstrations**

Dr. Brady Cox – Professor, Utah State University and NHERI@UTexas Co-PI