



## **2024 SEG Workshop on Fiber Optics Sensing for Energy Applications**

**DATE:** 21-23 July 2024

**Venue:** Sheraton Xi'an North City Hotel

**Address:** No. 32 Yingbin Avenue, Weiyang Road, Xi'an City, Shaanxi Province, China

**Tel:** +86 (0) 29-88866888

### **Recommended Hotel**

Sheraton Xi'an North City Hotel

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**Tel:** +86 (0) 29-88866888

*Note: Please kindly reserve your room in advance due to meeting the peak season and note "SEG Workshop" while booking.*

### **Contact Information**

If you have any questions regarding with the Workshop, please contact SEG China office:

Email: china@seg.org

Tel: 86 10 5820 5048 ext.802

## MEETING SCHEDULE

| Onsite Registration |             |                       |
|---------------------|-------------|-----------------------|
| 21 July, 2024       | 09:00-18:00 | Onsite Registration   |
|                     | 16:00-16:30 | Session Chair Meeting |
| 22 July, 2024       | 07:00-17:00 | Onsite Registration   |
| 23 July, 2024       | 07:00-17:00 | Onsite Registration   |

| 22 July 2024 Monday   |  |                       |
|---|--|-----------------------|
| <b>Location: Lin De Grand Ballroom, first floor of the hotel</b><br><b>Session 1: Opening Ceremony/Technical Co-chairs &amp; Invited Speaker Presentation</b><br><b>Opening Ceremony Host:</b><br><b>Session Chair:</b> |  |                       |
| Time  | Title  | Speaker               |
| 08:30-08:35   | Welcome Remarks by Technical Co-chair  | TBD                   |
| 08:35-08:40   | Opening Address  | TBD                   |
| 08:40-08:45   | Opening Address  | TBD                   |
| 08:45-09:10   | Presentation by Technical Co-chair: Image processing of jointly acquired 3D DAS-VSP data with an OBN survey in the Middle East | Gang Yu               |
| 09:10-09:35   | Presentation by Technical Co-chair: Distributed Strain Sensing Applications in Unconventional Reservoir Development            | Ge Jin                |
| 09:35-10:00   | Presentation by Technical Co-chair: Integration and Intelligence of Optical Fiber Distributed Acoustic Sensors                 | Zuyuan He             |
| 10:00-10:25   | <b>Group Photo &amp; Coffee Break</b>  |                       |
| 10:25-10:50   | Presentation by Technical Co-chair:  | Hongjun Lu            |
| 10:50-11:15   | Invited Speaker: Distributed Acoustic Sensing: challenges and opportunities  | Yingping Li (Online)  |
| 11:15-11:40   | Invited Speaker: Development and Application of Distributed Acoustic Sensor Based on Precision Laser Spectroscopy Technology   | Baoshan Wang          |
| 11:40-12:05   | Invited Speaker: TBD   | Zhengzheng Zhou (TBD) |
| 12:05-13:00   | <b>Lunch</b>   |                       |

**22 July 2024 Monday**

**Location: Lin De Grand Ballroom, first floor of the hotel**

**Session 2: DAS Data Management, Processing and AI & Imaging and Monitoring**

**Session Chair:**

| <b>Time</b>  | <b>Abstract No.</b>                    | <b>Title</b>   | <b>Speaker</b>   |
|--------------|--|--|--|
| 14:00-14:20  | #14                                    | DASEventNet: a Deep Learning Tool for DAS Microseismic Event Detection   | Tieyuan Zhu, Pennsylvania State University                                     |
| 14:20-14:40  | #27                                    | Joint unsupervised denoising and classification network microseismic event detection in hydraulic fracturing distributed acoustic sensing monitoring | Shaojiang Wu, Institute of Geology and Geophysics, Chinese Academy of Sciences |
| 14:40-15:00  | #28                                    | Interferometric reconstruction of surface waves from traffic noises by DAS   | Jie Shao, Institute of Geology and Geophysics, Chinese Academy of Sciences     |
| 15:00 -15:20 | #12                                    | Multi-cascade Aggregation Network for Simultaneous Denoising and Reconstruction of DAS-VSP Data  | Ming Cheng, Jilin University   |
| 15:20-15:40  |  | <b>Technology Showcase</b>   | <b>Halliburton</b>   |
| 15:40-16:00  | <b>Break &amp; Poster Presentation</b> |  |  |
| 16:00-16:20  | #06                                    | Deep Learning-Based VSP Velocity Model Building Using First Arrival Traveltime   | Wen Yang, BGP Inc, CNPC  |
| 16:20-16:40  | #05                                    | Distributed Gas-Liquid Two-phase Flow Monitoring Method  | Keqing Zhang, Huazhong University of Science and Technology                    |
| 16:40-17:00  | #41                                    | A Transformer-based Interpolation Method for Big Gap in DAS-VSP Record   | Xintong Dong, Jilin University   |
| 17:00-17:20  |  | <b>Technology Showcase</b>   | <b>CETC</b>  |

**23 July 2024 Tuesday**

**Location: Lin De Grand Ballroom, first floor of the hotel**

**Session 3: Advances in Fiber Optic Sensing (Interrogator, Fiber, Sensors & Conveyance) & Imaging and Monitoring**

**Session Chair:**

| <b>Time</b> | <b>Abstract No.</b> | <b>Title</b>   | <b>Speaker</b>  |
|-------------|---------------------|--|---|
| 08:30-08:50 | #47                 | Integrated application of DAS VSP & 3D surface seismic in reservoir description              | Yijun Zhou, Xi'an geophysical exploration branch, BGP   |
| 08:50-09:10 | #35                 | FWI and Multiple Migration of a Multi-well 3D DAS-VSP in Ultra-shallow Water                 | Qiongwei Li, Oil and Gas Technology Research Institute, PetroChina Changqing Oilfield Company |
| 09:10-09:30 | #33                 | A velocity-strain formulation for waveform inversion of DAS fiber-optic data based on gauge- | Wei Zhou, King Fahd University of Petroleum &   |

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|  |  | length averaging cost function  | Minerals, Dhahran, Saudi Arabi  |
| 09:30-09:50  | #20                                    | Determination of Moment Tensor Solution of Microseismic events during hydraulic fracturing using a fiber-optic distributed acoustic sensor array        | Haoyu Lai, Institute of Geology and Geophysics, Chinese Academy of Sciences         |
| 09:50-10:10  | #26                                    | Comparative analysis of distributed acoustic sensing and geophones with horizontal and vertical vibrators for subsurface seismic imaging in urban areas | Yikang Zheng, Institute of Geology and Geophysics, Chinese Academy of Sciences      |
| 10:10-10:30  | <b>Break &amp; Poster Presentation</b> |   |   |
| <b>Session 4: Field Applications and Application Studies</b> |  |   |   |
| <b>Session Chair:</b>  |  |   |   |
| 10:30-10:50  | #32                                    | Geological Insights from LFDAS Measurements: Monitoring Fracture Development in Hydraulic Fracturing in Longmaxi Formation, Sichuan Basin               | Xiaosong Fu, Fiber Optoelectronics Technology Co. Ltd                               |
| 10:50-11:10  | #08                                    | The Applications of Distributed Fiber Optic Sensing for Production Optimization in Oil Shale Reservoir  | Liu Jiangbo, Research Institute of Oil & Gas Technology, Changqing Oilfield Company |
| 11:10-11:30  | #13                                    | Cross Well Communication Evaluation with first Cement-in Fiber at Qingcheng Shale Oil HFTS  | Jie Tang, Halliburton   |
| 11:30-11:50  | #31                                    | Application of single-mode distributed fiber optic for detection in horizontal well   | Jianqiang Yang, Karamay Xianbo Technology Innovation and Incubation Co., Ltd        |

**23 July 2024 Tuesday**

**Location: Lin De Grand Ballroom, first floor of the hotel**

**Session 5: Field Applications and Application Studies**

**Session Chair:**

| <b>Time</b>  | <b>Abstract No.</b> | <b>Title</b>   | <b>Speaker</b>   |
|--------------|---------------------|--|--|
| 14:00-14:20  | #01                 | Uncertainty analysis of quantitative hydraulic fracturing fluid and sand volumes calculated from DAS data                                    | Zhengguang Zhao, North China Institute of Science and Technology                           |
| 14:20-14:40  | #02                 | Research of the application of uDAS and 3D VSP in tapping the potential of remaining reserves: an Changqing Oilfield Sai 6 reservoir example | Jiawei Ren, Oil & Gas Technology Research Institute, PetroChina Changqing Oilfield Company |
| 14:40-15:00  | #15                 | Application of 3D DAS-VSP in Junggar Basin, Western China  | Zhidong Cai, Optical Science and Technology Ltd. CNPC                                      |
| 15:00 -15:20 | #29                 | Production profiling of fractured horizontal well in tight oil reservoir from distributed temperature sensing                                | Hongwen Luo, Southwest Petroleum University  |
| 15:20-15:40  | #44                 | Distributed Fiber Optic Sensing for Production Logging Applications: A Technology Review for Changqing Oilfield                              | Ping Liu, Changqing Branch of China national logging corporation                           |

|             |  |  |  |
|-------------|--|--|--|
| 15:40-16:00 | <b>Break &amp; Poster Presentation</b> |  |  |
| 16:00-16:20 | #38                                    | Strain Response Pattern of Inclined Fractures for Offset Well LF-DAS Monitoring  | Weibo Sui, China University of Petroleum (Beijing)                   |
| 16:20-16:40 | #43                                    | Comparative analysis of spiral fiber DAS data and three-component geophone data for engineering geological exploration | Zhongzhi Li, Shandong University                                     |
| 16:40-17:00 | #30                                    | Advances in Fiber-Optic Production Profile Testing in Unconventional Oil and Gas Reservoirs                            | Hao Zhang, Optical science& technology Chengdu Ltd. Co., BGP., CNPC. |
| 17:00-17:20 | #42                                    | Monitoring TBM tunneling construction with distributed acoustic sensing  | Gang Fang, Shandong University                                       |
| 17:20-17:40 | <b>CLOSING CEREMONY</b>                |  |  |

| <b>Poster Session</b>  |           |              |  |  |
|--|-----------|--------------|--|--|
| <b><u>15:40-16:00, Monday, 22 July 2024</u></b>  |           |              |  |  |
| <b>Session: Advances in Fiber Optic Sensing &amp; DAS Data Management, Processing and AI</b> |           |              |  |  |
| <b>Session Chair:</b>  |           |              |  |  |
| Time   | e-Screen  | Abstract No. | Title  | Author   |
| 15:40-15:45  | <b>1#</b> | <b>#04</b>   | Highly sensitive acoustic detection system containing weak grating fiber based on spring sensitization                   | Quanlong He, Logging Technology Research Institute, China National Logging Corporation |
| 15:45-15:50  | <b>1#</b> | <b>#16</b>   | Integrated application of DAS VSP & 3D surface seismic in reservoir description  | Jiangang Fu, Optical Science and Technology Chengdu Ltd, BGP Inc., CNPC                |
| 15:50-15:55  | <b>1#</b> | <b>#25</b>   | Monte Carlo non-negative dictionary learning method for distributed acoustic sensing data denoising                      | Yang Zeng, Yangtze University  |
| 15:40-15:45  | <b>2#</b> | <b>#11</b>   | Deep residual neural network with patch learning for denoising DAS data  | Gui Chen, China University of Petroleum Beijing  |
| 15:45-15:50  | <b>2#</b> | <b>#18</b>   | Research on Monitoring and Interpretation of Injection Profiles in Horizontal Wells Based on Distributed Fiber Optic DAS | Qinze Li, Optical science& technology Chengdu Ltd. Co., BGP., CNPC                     |
| 15:50-15:55  | <b>2#</b> | <b>#37</b>   | Application of DAS-Walkaway VSP in ultra-deep complex structure area of Kuqa Depression, Tarim Basin                     | Tengyu Wang, Tarim Oilfield Company, PetroChina  |
| <b><u>10:10-10:30, Tuesday, 23 July 2024</u></b>   |           |              |  |  |
| <b>Session: Field Applications and Application Studies</b>                                   |           |              |  |  |
| <b>Session Chair:</b>  |           |              |  |  |
| 10:10-10:15  | <b>1#</b> | <b>#09</b>   | Technical Analysis of joint borehole and surface seismic acquisition in the Shengli Exploration area using I-DAS system  | Fengming Mu, Shengli Branch of Sinopec Petroleum Engineering Geophysics Co., Ltd.      |
| 10:15-10:20  | <b>1#</b> | <b>#19</b>   | Seismic acquisition method and experiment of helically wound HW  | Fengyu Tan, Optical science& technology Chengdu Ltd. Co.,                              |

|   |    |     |   |  |
|---|----|-----|---|--|
|   |    |     | fiber   | BGP., CNPC   |
| 10:20-10:25   | 1# | #21 | New progress in the application of optical fiber sensing technology in unconventional oil and gas field development | Zhou Wei, Optical science& technology Chengdu Ltd. Co., BGP., CNPC         |
| 10:10-10:15   | 2# | #22 | Application of distributed acoustic sensing VSP in open-hole well of deep shale gas                                 | Yu Wang, Optical science& technology Chengdu Ltd. Co., BGP., CNPC          |
| 10:15-10:20   | 2# | #40 | Differences in measurement results caused by different installation positions of fiber optic DAS                    | Cai Dahai, Guokan Research Institute                                       |
| 10:20-10:25   | 2# | #45 | Application of Downhole Tubulars Leak Detection Method Based on Distributed Fiber Optics                            | Ping Liu, Changqing Branch of China national logging corporation           |
| <b><u>15:40-16:00, Tuesday, 23 July 2024</u></b>  |    |     |   |  |
| <b>Session: Monitoring/Downstream, Construction, Civil Engineering, Smart Cities/Environmental Monitoring</b> |    |     |   |  |
| <b>Session Chair:</b>   |    |     |   |  |
| 15:40-15:50   | 1# | #39 | Joint DSS and DAS monitoring experiment for strain evolution during hydraulic fracturing process                    | Xin Huang, SINOPEC Petroleum Exploration and Production Research Institute |
| 15:50-16:00   | 1# | #17 | Distributed Fiber Optic Microseismic Response Characteristics in Fracture-Induced TTI Media                         | Yi Yao, Institute of Geology and Geophysics, Chinese Academy of Sciences   |
| 15:40-15:50   | 2# | #10 | The meso-mechanical mechanism of the weak muddy intercalation reinforced via microwave irradiation                  | Yucheng Gu, Southwest Petroleum University                                 |
| 15:50-16:00   | 2# | #07 | Thunder Observation Using Urban Telecom Optical Fiber Cable With Distributed Acoustic Sensing                       | Heting Hong, University of Science and Technology of China                 |