SIAM Conference on Mathematical & Computational Issues in the Geosciences

March 11 – March 14, 2019
Houston Marriott Westchase
Houston, Texas, U.S.

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<th>Time</th>
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<tr>
<td>Sunday, March 10</td>
<td>Registration: Westchase 3/4</td>
</tr>
<tr>
<td>11:50 a.m. - 1:20 p.m.</td>
<td>Lunch Break</td>
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<td>Monday, March 11</td>
<td>Registration: Westchase 3/4</td>
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<tr>
<td>1:20 p.m. - 2:05 p.m.</td>
<td>IP2 Homogenization Approach for Modeling of Reactive Transport in Porous Media</td>
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<tr>
<td>2:05 p.m. - 2:15 p.m.</td>
<td>Intermission</td>
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<td>2:15 p.m. - 4:20 p.m.</td>
<td>Concurrent Sessions</td>
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<tr>
<td>6:15 p.m. - 7:15 p.m.</td>
<td>SIAG/GS Business Meeting</td>
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<tr>
<td>7:15 p.m. - 7:30 p.m.</td>
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<tr>
<td>7:30 p.m. - 9:30 p.m.</td>
<td>MT2 Phase Transitions in Porous Media</td>
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<td>Tuesday, March 12</td>
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**Notes:**
- **Sunday, March 10:**
  - Registration: Westchase 3/4
  - Lunch Break

- **Monday, March 11:**
  - Registration: Westchase 3/4
  - Welcome and Introductory Remarks: Grand Ballroom EFGH
  - Coffee Break: Grand Ballroom D
  - Coffee Break: Grand Ballroom D

- **Tuesday, March 12:**
  - Registration: Westchase 3/4
  - Remarks and SIAG/GS Early Career and SIAG/GS Career Prize Presentations: Grand Ballroom EFGH
  - Coffee Break: Grand Ballroom D

**Additional Notes:**
- **Posters will be on display during Tuesday coffee breaks**
- Coffee breaks are held during specific hours throughout the conference.
Tuesday, March 12

11:50 a.m. - 1:20 p.m.
Lunch Break
Attendees on their own

1:20 p.m. - 2:05 p.m.
IP3 Challenges in Recovering Deep Low-Wave-number Updates in Full Waveform Inversion
Anatoly Baumstein, ExxonMobil Upstream Research Company, U.S.
Grand Ballroom EFGH

2:05 p.m. - 2:15 p.m.
Intermission

2:15 p.m. - 4:20 p.m.
Concurrent Sessions

MS20 Advances in Modeling of Non-linear Elasticity and Plasticity for Geomaterials
Westchase 1/2

MS21 Upscaled Models for Multiscale and Multi-physics Problems - Part I of II
Grand Ballroom B

MS22 Solvers for Petroleum Reservoir Simulation
Briarpark 1/2

MS23 Physics-based Rupture and Tsunami Simulation - Part I of II
Richmond 1/2

MS24 Modeling with Constraints and Phase Transitions - Part I of II
Grand Ballroom A

MS25 Practical Aspects of Large-scale Sparsity-promoting Seismic Inversion - Part I of II
Grand Ballroom EFGH

4:20 p.m. - 4:50 p.m.
Coffee Break and Poster Session
**Posters will be on display during Tuesday coffee breaks**
Grand Ballroom D

4:50 p.m. - 6:55 p.m.
Concurrent Sessions

MT3 Data-Driven Discovery for Geophysical Systems: Integrating Machine Learning and Dynamical Systems for Learning Multiscale Physics Systems
Grand Ballroom EFGH

MS26 Optimal Transport for Imaging in Geosciences - Part II of II
Briarpark 1/2

MS27 Optimization of Sequential Decisions under Uncertainty for Subsurface Applications
Richmond 1/2

MS28 Advanced Models and Methods for Underground Flows in Complex Geometries with Applications - Part II of II
Westchase 1/2

Wednesday, March 13

8:00 a.m. - 5:15 p.m.
Registration
Westchase 3/4

2:05 p.m. - 2:15 p.m.
Intermission

2:15 p.m. - 4:20 p.m.
Concurrent Sessions

MS35 Practical Aspects of Large-scale Sparsity-promoting Seismic Inversion - Part II of II
Grand Ballroom EFGH

MS36 Physics-based Rupture and Tsunami Simulation - Part II of II
Richmond 1/2

MS37 Modeling and Numerical Methods for Complex Subsurface Flow - Part I of II
Grand Ballroom A

MS38 Efficient Solvers for Nonlinear Flows
Grand Ballroom B

MS39 Advances in Modeling and Simulation of Pore Scale Flows
Briarpark 1/2

MS40 Verification Benchmarks for Single-phase Flow in Three-dimensional Fractured Porous Media - Part I of II
Westchase 1/2

4:20 p.m. - 4:50 p.m.
Coffee Break
Grand Ballroom D

4:50 p.m. - 6:55 p.m.
Concurrent Sessions

MS41 Advances in Bayesian Estimation Strategies in Subsurface Processes
Westchase 1/2

MS42 Coupled Problems of Poromechanics - Part I of II
Briarpark 1/2

MS43 Advanced Mathematical Approaches for Simulation of Fault Reactivation - Part II of II
Grand Ballroom EFGH

MS44 Convergence Verification and Challenges in Climate and Weather Simulations - Part I of II
Richmond 1/2

CP9 Data Assimilation and Uncertainty Quantification II
Grand Ballroom B

CP10 Numerical Methods II
Grand Ballroom A

8:00 p.m. - 9:00 p.m.
PD1 Career Panel
Grand Ballroom EFGH
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| 8:00 a.m. - 3:00 p.m. | Registration  
Westchase 3/4 |
| 8:20 a.m. - 8:30 a.m. | Closing Remarks  
Grand Ballroom EFGH |
| 8:30 a.m. - 9:15 a.m. | IP5 Multicomponent Elastic Imaging: New Insights from the Old Equations  
Yunyue Elita Li, National University of Singapore, Singapore  
Grand Ballroom EFGH |
| 9:15 a.m. - 9:45 a.m. | Coffee Break  
Grand Ballroom D |
| 9:45 a.m. - 11:50 a.m. | Concurrent Sessions  
MS45 Uncertainty Quantification for Geophysical Inverse Problems  
Grand Ballroom EFGH  
MS46 Coupled Problems of Poromechanics - Part II of II  
Briarpark 1/2  
MS47 Verification Benchmarks for Single-phase Flow in Three-dimensional Fractured Porous Media - Part II of II  
Westchase 1/2  
MS48 New Approaches for Coupled Nonlinear and Discontinuous Problems in Hydrology  
Grand Ballroom B  
MS49 Convergence Verification and Challenges in Climate and Weather Simulations - Part II of II  
Richmond 1/2  
MS50 Modeling and Numerical Methods for Complex Subsurface Flow - Part II of II  
Grand Ballroom A |
| 11:50 a.m. - 1:20 p.m. | Lunch Break  
Attendees on their own |
| 1:20 p.m. - 2:05 p.m. | IP6 Learning from Sparse Observations: The Global Ocean State and Parameter Estimation Problem  
Patrick Heimbach, University of Texas at Austin, U.S.  
Grand Ballroom EFGH |
| 2:05 p.m. - 2:35 p.m. | Coffee Break  
Grand Ballroom D |
| 2:35 p.m. - 4:40 p.m. | Concurrent Sessions  
MS51 Seismic Tensor Completion  
Richmond 1/2  
MS52 Fracture Formation Coupled with Fluid Flow and Wave Propagation in the Porous Media - Part II of II  
Westchase 1/2  
MS53 Novel Computational Methods and Stabilization of Fingering Instabilities for Porous Media Flows in Chemical EOR  
Grand Ballroom A  
MS54 New Computational Approaches to Storm Surge Modelling  
Grand Ballroom EFGH  
MS55 Multiscale Computation of Subsurface Processes  
Grand Ballroom B  
MS56 Recent Advances in Computational Modeling of Coupled Flow and Geomechanics in the Subsurface Environment - Part II of II  
Briarpark 1/2 |

**Key to abbreviations and symbols**

- **MS** = Minisymposium
- **MT** = Minitutorial
- **PD** = Panel Discussion
- **IP** = Invited Plenary Speaker
- **CP** = Contributed Presentation
- **SP** = Special Lecture
- **= Business Meeting
- **= Poster Session
- **= Coffee Break
- **= Refreshments Served
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SIAM Activity Group on Geosciences (SIAG/GS)

https://www.siam.org/membership/Activity-Groups/detail/geosciences

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- Biennial conference
- SIAG/GS Career Prize
- SIAG/GS Junior Scientist Prize
- SIAG/GS Wiki

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- Electronic communications about recent developments in your specialty
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- Participation in the selection of SIAG/GS officers

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- atmospheric and oceanographic science
- computational science
- data mining
- geophysical science
- optimization
- uncertainty quantification and more...

The collection, Featured Lectures from our Archives, includes audio and slides from 40+ conferences since 2008, including talks by invited and prize speakers, select minisymposia, and minitutorials. Presentations from SIAM conferences are being added throughout the year.

In addition you can view short video clips of speaker interviews from sessions at Annual Meetings starting in 2010.

Plans for adding more content are on the horizon. Keep an eye out!

The audio, slide, and video presentations are part of SIAM’s outreach activities to increase the public’s awareness of mathematics and computational science in the real world, and to bring attention to exciting and valuable work being done in the field. Funding from SIAM, the National Science Foundation, and the Department of Energy was used to partially support this project.

New presentations are posted every few months as the program expands with sessions from additional SIAM meetings. Users can search for presentations by category, speaker name, and/or key words.