Streamline Simulation

Instructor: Dr. Akhil Datta-Gupta, Texas A&M University, USA

I. Course Description

This course is designed to cover introductory and advanced concepts in streamline simulation and its applications for reservoir characterization, reservoir management and field development strategy. Specific topics covered will be: (i) Streamline Simulation: Background and Fundamentals (ii) Streamline Simulation: State-of-the-art and Applications (iii) History Matching and Dynamic Data Integration: Background (iv) Streamline-based History Matching and Analysis and (v) Field Case Studies and Experience. The course will involve a combination of theoretical discussion, practical applications and computer exercises to provide hands-on training on the methods.

II. Course Duration

The course is designed to be for five days.

III. Background Required

The course is designed for practicing geoscientists and engineers. No formal training in reservoir simulation is required other than knowledge of basic mathematics.

IV. Instructor

Akhil Datta-Gupta is the Rob L. Adams Professor in Petroleum Engineering at Texas A&M U. in College Station, TX (USA). He holds a PhD in Petroleum Engineering from the U. of Texas at Austin and has worked with BP Exploration/Research and the Lawrence Berkeley National Laboratory. He is well-known throughout the industry for his contributions to reservoir characterization, development and application of 3D streamline simulation methods and dynamic data integration into reservoir models. He has over 60 publications in the related areas and was awarded the Lester C. Uren award (2003) by the Society of Petroleum Engineers for his contributions to Petroleum technology. He is an SPE distinguished member and a recipient of the AIME Rossitter W. Raymond award (1992) and SPE Cedric K. Ferguson Certificate (2000). He is also an SPE distinguished lecturer (1999-2000) and an SPE distinguished author (2000).
# Streamline Simulation

Dr. Akhil Datta-Gupta  
Texas A&M University

## Course Outline

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<td>• Line Source and Sink Solutions</td>
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<th>Streamline Simulation: State of the Art</th>
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<td>• Tracing streamlines in 3-D</td>
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<td>• The streamline time of flight and its significance</td>
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<td>• Analytical/numerical solutions along streamlines</td>
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<td>• Modeling gravity and cross-streamline mechanisms</td>
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<td>• Practical considerations and limitations</td>
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<td>• Tracer Tests, Waterflooding and Miscible Flooding</td>
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<td>• Dynamic Data Integration: Background and Motivation</td>
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<th>Field Experiences, Discussion and Wrap-up</th>
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<td>• Field Applications involving pattern management, allocation factors (bundles), swept volume calculations – tracer interpretation, assisted history matching, flow visualization, ranking and uncertainty assessment, upscaling QC etc.</td>
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<td>• Streamline vs. Finite Difference: Advantages and Limitations</td>
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<td>• Streamline Modeling: Future Directions and Research Needs</td>
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