Welcome
Today’s LOGISTICS
Why are YOU here?

Coffee
Did You Know There is an APP?

http://guidebook.com/app/MATLABEvents
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>8:00 a.m.</td>
<td>Registration and Continental Breakfast, 7th Floor Foyer</td>
</tr>
<tr>
<td></td>
<td><strong>Keynote Presentations: Astor Ballroom</strong></td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>Welcome Address</td>
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<tr>
<td></td>
<td>MathWorks</td>
</tr>
<tr>
<td>9:20 a.m.</td>
<td>Origins, Evolution, and the Future Directions of MATLAB</td>
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<td>Lorn Shure, MathWorks</td>
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<tr>
<td>10:10 a.m.</td>
<td>A Technology Platform with a MATLAB Backbone: A Financial Engineering True Story</td>
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<td>Edward Byrne, Munich Re Trading LLC</td>
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Psst...you are here ➔
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**Sponsors:**

- MATLAB Computational Finance Conference 2015
- Numerix
- FactSet
- ModelIT
- Symmys
- GARP
- SQAP

**Event Location:**

- Gotham
- Chelsea
- Hudson
- Empire
- Times Square
- Harlem
- Duffy
- Olmstead
- Gramercy
- Herald
- Soho
- Columbia

**Schedule Details:**

- Welcome Address
- Origins, Evolution, and the Future Directions of MATLAB
- A Technology Platform with a MATLAB Backbone: A Financial Engineering True Story
- Break and Exhibits
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<td>Integrate MATLAB Analytics into Your Business</td>
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<td>12:00 p.m.</td>
<td>Massive Parallelism in Computational Finance</td>
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<td>12:40 p.m.</td>
<td>Ask the Engineer: Lunchtime Q&amp;A - Duffy, Columbia, Soho, Times Square, and Astor Exhibits in Foyer</td>
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<td><strong>Track 2: Empire Complex</strong></td>
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<td><strong>Master Classes: Herald/Gramercy</strong></td>
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<td><strong>Integrating MATLAB Analytics into Your Business-Critical Applications</strong></td>
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FAQ

- Code
- Presentations
- Q&A
- Restrooms
- Free Stuff (Drawing)
  - Survey == Kindle
  - May 22\textsuperscript{nd} Notification
MATLAB®

The Language of Technical Computing
Financial Technical Computing Workflow

Access
- Files
- Databases
- Datafeeds

Research and Quantify
- Data Analysis & Visualization
- Financial Modeling
  - $S=31; K=30$
  - $C=	ext{blsprice}$
  - $P=C-S+K\text{e}^{x}$
- Application Development

Share
- Reporting
- Applications
- Production
  - .dll
  - C/C++
  - Java
  - .NET

Automate
Scripting – analysis process and procedures

MATLAB scripts ➔ Published Report
Scripting – analysis process and procedures

Scripts

Functions

Classes

Apps

Symbolic Notebook

Modeling Government Bond Data Using Yield Curves

We wish to model government bond yield data using Nelson Siegel and Svensson models. This notebook calculates Jacobian matrices for these models. The Jacobians will be used to speed up the curve fitting routines that optimize model parameters.

Nelson-Siegel model

\[ y(t) = \frac{b_0 + b_2 e^{-kt}}{1 - e^{-kt}} \]

Svensson model

\[ y(t) = \frac{b_0 + b_1 (1 - e^{-kt})}{1 - e^{-kt}} \]

Note that \( t \) is the independent variable in these models, and represents time to maturity.

I. Nelson-Siegel model

Define the Nelson-Siegel model equation:

\[ y(t) = b_0 + b_1 \exp(-t/\tau) + b_2 t \exp(-t/\tau) \]

Extract the indeterminates (i.e. variables) that the Nelson Siegel model is comprised of, and subtract the independent \( t \). These variables will be needed for the Jacobian calculation:

\[ \begin{align*}
    v_1 &= \text{indets}(y(t)) \text{ minus } (t) \\
    &= (b_0, b_1, b_2, \tau)
\end{align*} \]
Functions – financial models and algorithms
Classes – integrated data and algorithms
Applications – self-serve proprietary analytics
Automation: to share your ideas and processes with others

MATLAB User → MATLAB Code → MATLAB Apps

MATLAB User → p-code → MATLAB User

Visible IP Sharing

Protected IP Sharing
Automation: to share ideas and processes quickly and robustly
Reuse: Sharing algorithms across the organization

MATLAB Production Server

Web Server

Application Server

Database Server

Web Applications

Desktop Applications

Batch Applications

MATLAB Compiler

Portfolio Optimization

Pricing

Risk Analytics

MATLAB Production Server

MATLAB Compiler

Web Server

Application Server

Database Server

Web Applications

Desktop Applications

Batch Applications
Financial Technical Computing Workflow

Access
- Files
- Databases
- Datafeeds

Research and Quantify
- Data Analysis & Visualization
- Financial Modeling

Share
- Reporting
- Applications
- Production

Automate
- Files
- Databases
- Datafeeds

Financial Model: $S = 31; \ K = 30$

MathWorks
MATLAB Computational Finance Conference 2015 | 21
MATLAB – The Financial Development Platform