





Webinar:
**Working with Femap
Data Surfaces**


Frank Fan, ATA Engineering
December 10th, 2020

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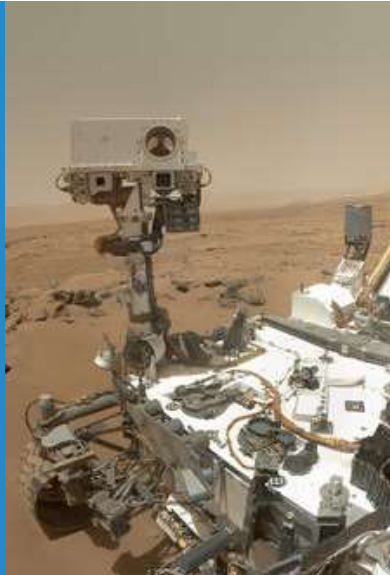
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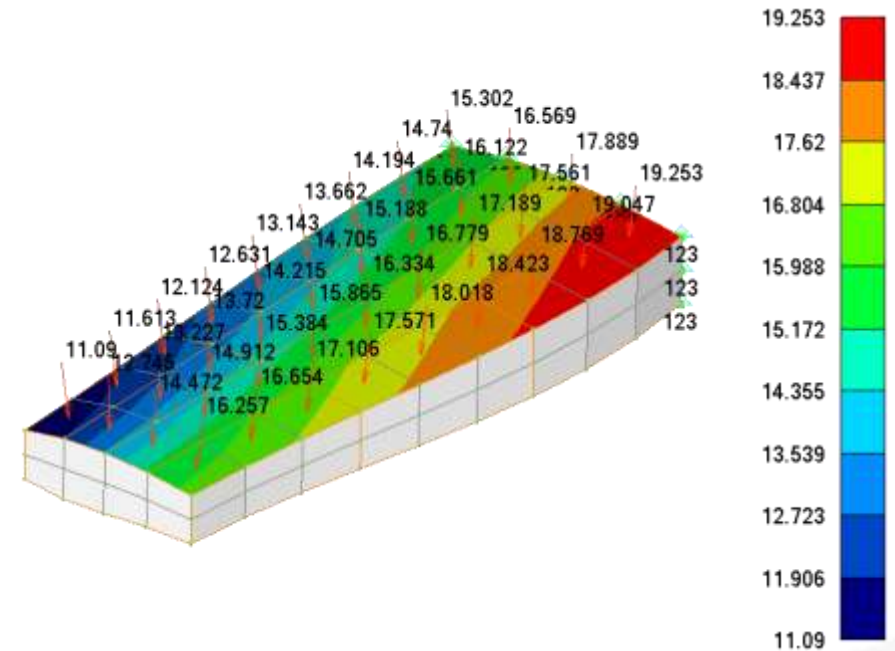
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Femap Data Surface Webinar

Agenda

- Data Surfaces introduction
 - Data Surface Editor Tool
- Data Surface applications
 - Load creation
 - Data visualization
 - Output/Input mapping
- Data surface manipulation



Femap Data Surface

Introduction

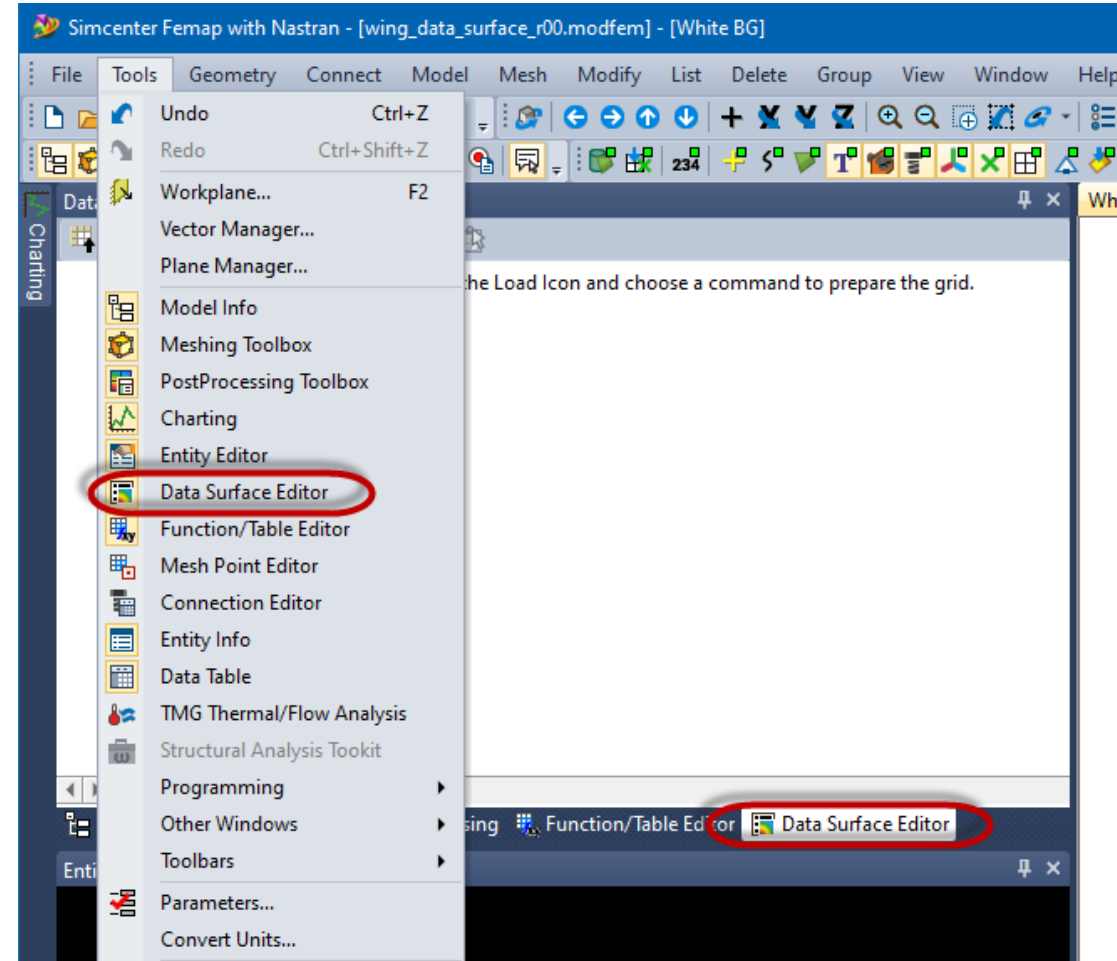
- A Femap data surface is a table of values defined on coordinates
 - Data surface can be 1-D, 2-D or 3-D
- Useful for creating loads with the “Data Surface” method
 - Convert load to an output for visualization as a color contour
- Enables manipulation of load sets and output data
 - Load set combination
 - Output result set processing

	0	1	2	3	4	5
	Point	Coordinates				Value
0	0.	11.8	10.8	0.	100.	
1	1.	11.8	10.8	10.	90.	
2	2.	11.8	10.8	20.	80.	
3	3.	11.8	10.8	30.	70.	
4	4.	11.8	10.8	40.	60.	
5	5.	11.8	10.8	50.	50.	
6	6.	11.8	10.8	60.	40.	
7	7.	11.8	10.8	70.	30.	
8	8.	11.8	10.8	80.	20.	
9	9.	11.8	10.8	90.	10.	

Femap Data Surface Editor

Introduction

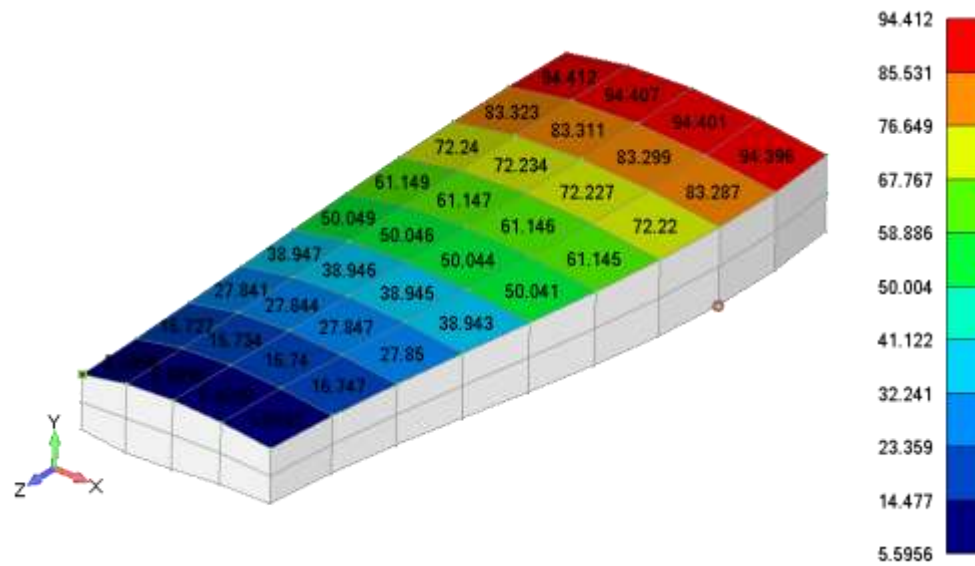
- Data Surface Editor is a tool to help create Data Surfaces
 - Data Surface Editor is a Dockable Pane listed under Tools
 - Predefined methods to create Data Surfaces
 - Transfer a Data Surface between different models
 - Displays the values in a tabular format
 - Values can be edited
 - New for 2020.2: Transfer table values to Excel



Femap Data Surface Demo 1 – Along Coordinate Method

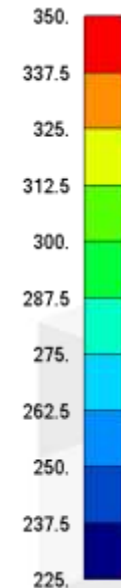
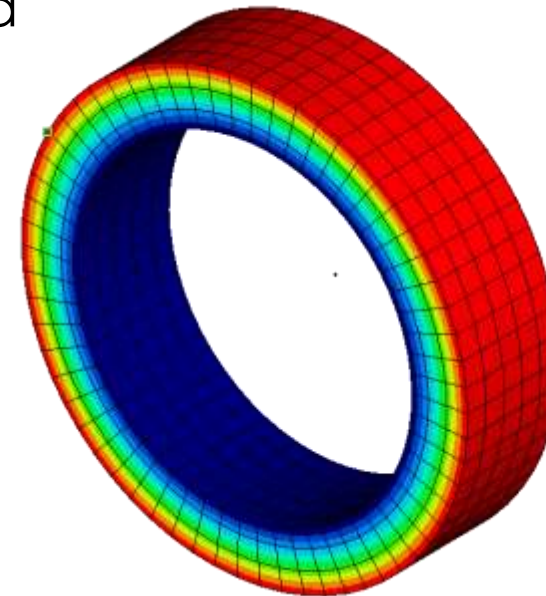
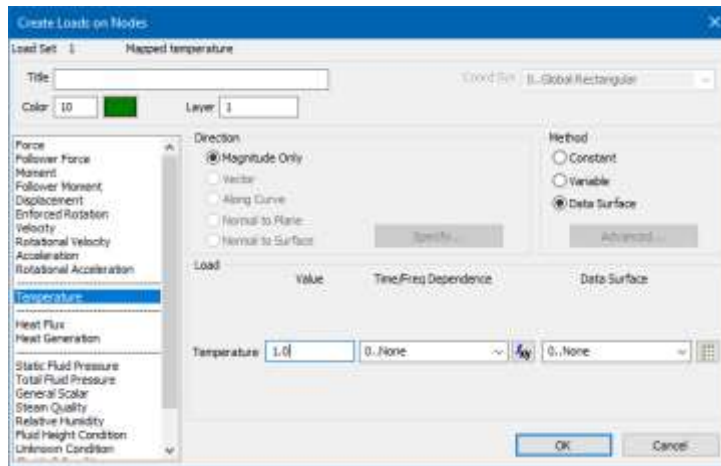
- The following features are used in this demonstration:
 - Data Surface Editor
 - Interface with external program (Excel)
 - Create Load Set using Data Surface
 - Visualize the Load Set

Point	0	1	2	3	4	Va
0	0.	11.8	10.8	0.	100.	
1	1.	11.8	10.8	10.	88.8888889	
2	2.	11.8	10.8	20.	77.7777778	
3	3.	11.8	10.8	30.	66.6666667	
4	4.	11.8	10.8	40.	55.5555556	
5	5.	11.8	10.8	50.	44.4444444	
6	6.	11.8	10.8	60.	33.3333333	
7	7.	11.8	10.8	70.	22.2222222	
8	8.	11.8	10.8	80.	11.1111111	
9	9.	11.8	10.8	90.	0.	



Femap Data Surface Demo 2 – Mesh Data Surface Method

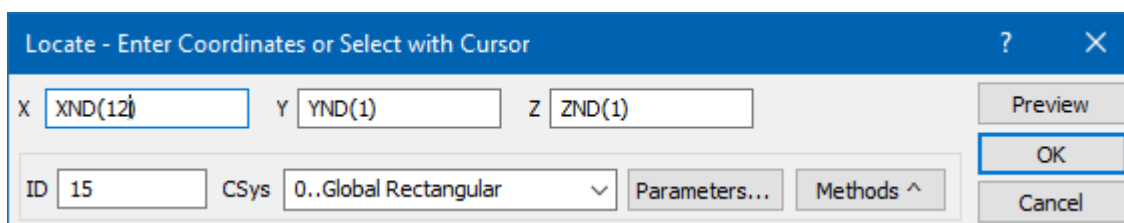
- The following features are used in this demonstration:
 - Create Data Surface directly from the Load command
 - Use Femap Function in an equation (e.g. XND(!i))
 - Mesh Data Surface
 - Update Data Surface and Load



Femap Functions

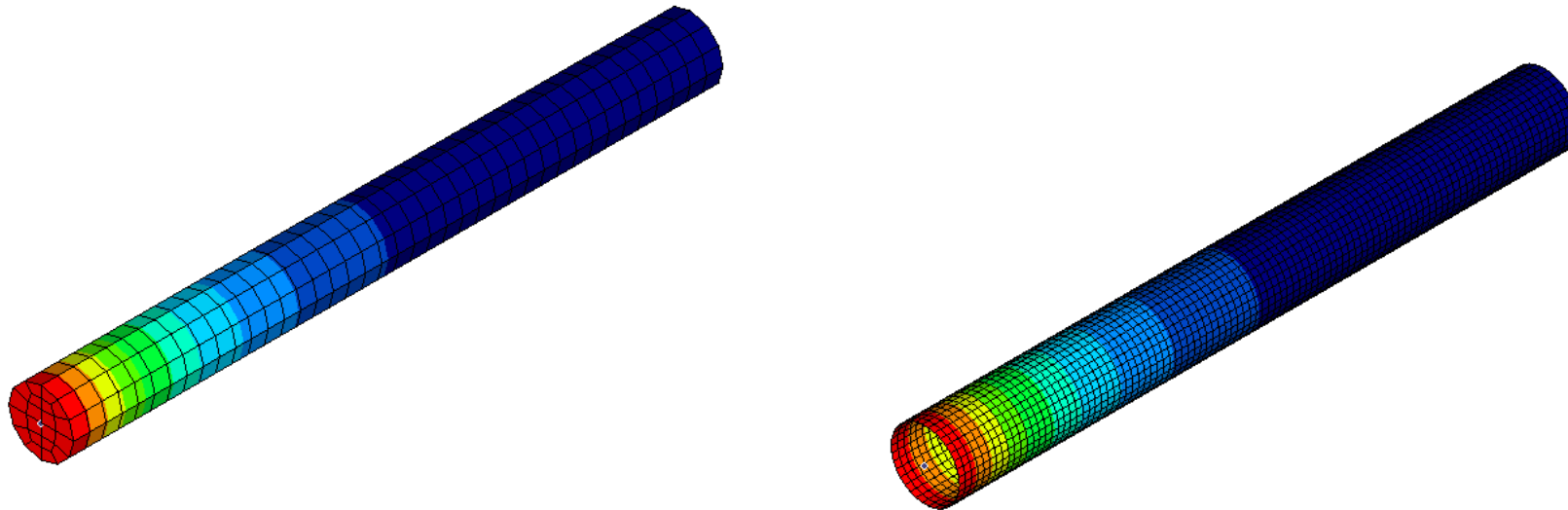
See Appendix C of Femap User Guide

- Femap Functions can be used in equations to define values for numeric input (Ctrl-E)
- Math functions such as $\text{LN}(x)$, $\text{LOG}(x)$, $\text{EXP}(x)$, $\text{SIN}(x)$, etc
- Model query functions such as $\text{FNI}(\text{functionID};x)$, $\text{XND}(\text{nodeID})$, $\text{YND}(\text{nodeID})$, $\text{ZND}(\text{nodeID})$, etc



Femap Data Surface Demo 3 – Mapping Between Models

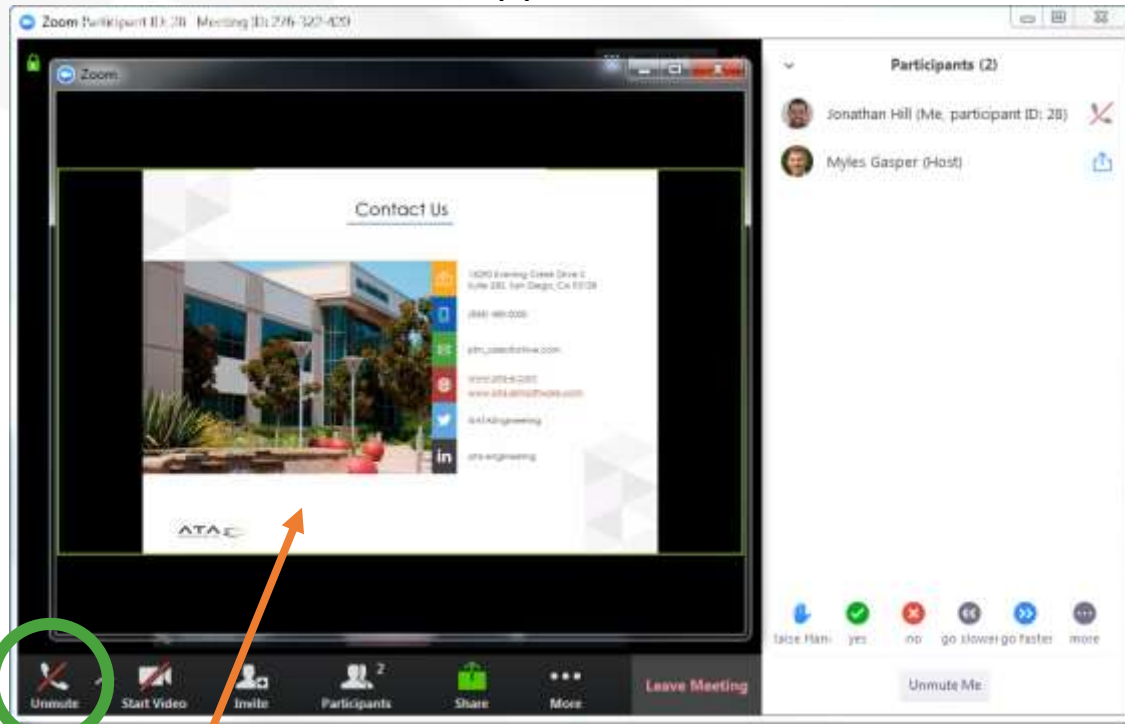
- The following features are used in this demonstration:
 - Output Map Data Surface command
 - Data Surface Copy and Paste commands
 - Output to input mapping between different models
 - Align and View Output Map commands



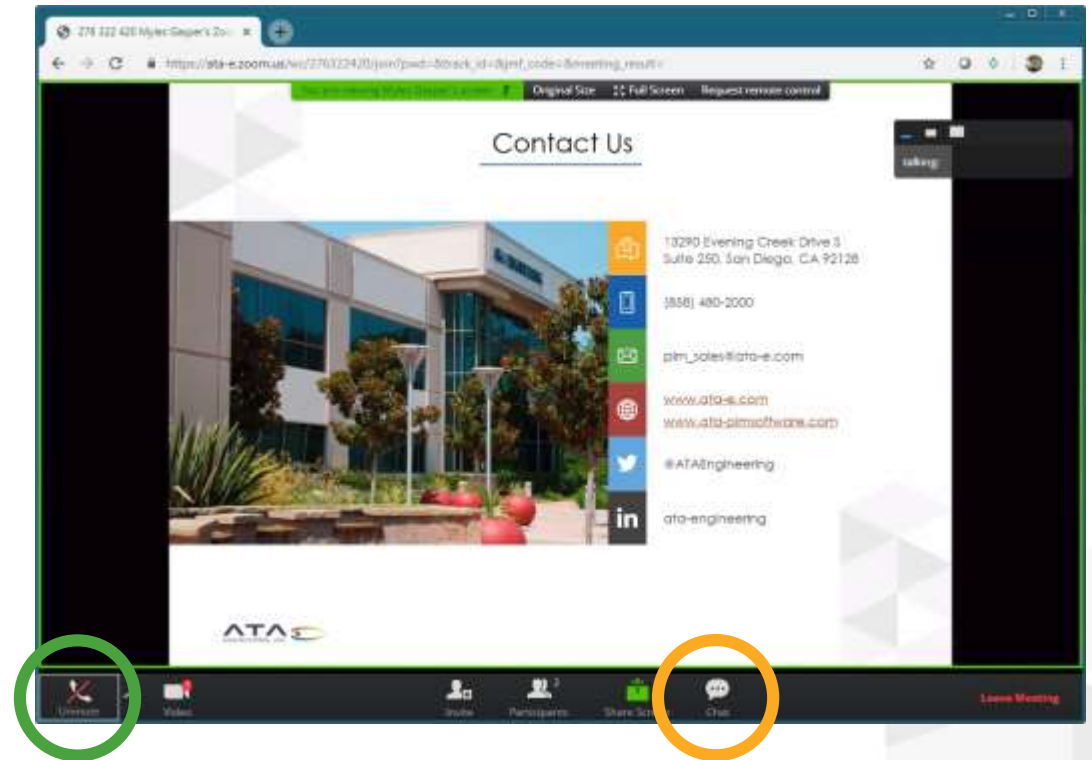
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Zoom Application



Web Interface



Screenshare in separate window

Chat is available under More



Contact Us



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