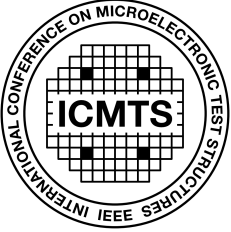


Making Your Presentation Slides for ICMTS

Brad Smith

April 2025

Outline



- Introduction



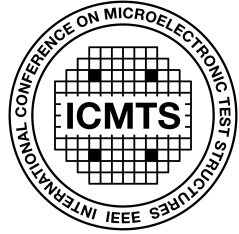
- Making Presentation Slides



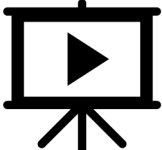
- Formatting Data to Maximize Impact

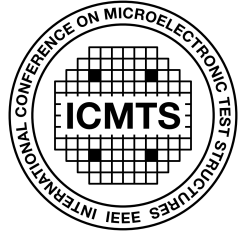


- Summary



Introduction

- Intended audience
 - People who will give a presentation at ICMTS (Int'l Conference on Microelectronic Test Structures)
 - Also applicable to any technical presentation
- Intended outcome
 - You understand how to make readable slides and can speak to them clearly
 - You understand that there is more than one “good” way
 - You decide what works for you
 - You have some tools to give presentations that have an impact on the audience
- Also on this site:  “Giving Your ICMTS Presentation”

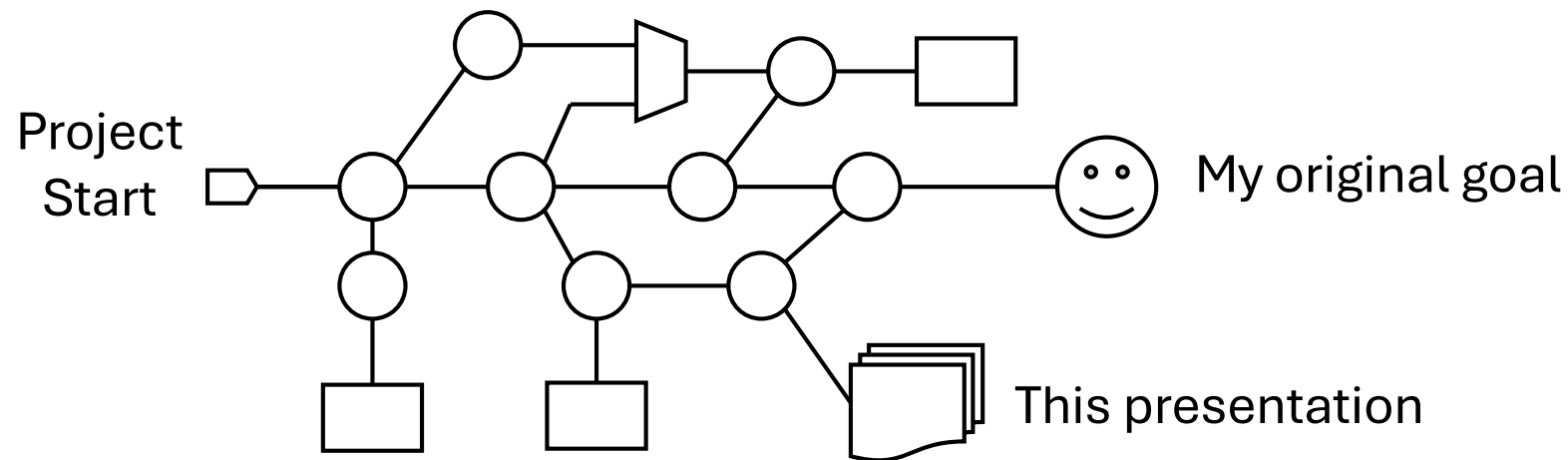


Know Your Audience

- Target your talk to the least-knowledgeable person in the audience
 - Defines amount of background required
 - Defines acronyms to be defined (good rule of thumb: all of them)
- Most of the time you are more knowledgeable than the audience
 - Your job is to help them to understand your message
 - You have some control over how much they absorb

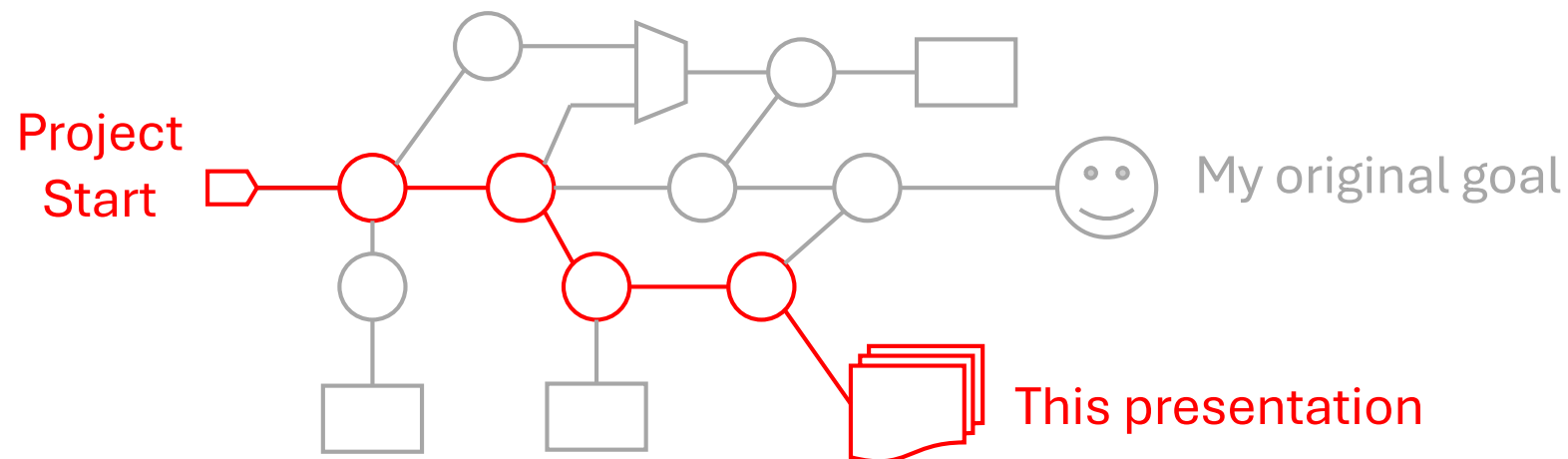
Know Your Main Message

- What ≤ 3 things do you want the audience to remember from your talk?
- Present only the work that leads to the conclusion(s)
 - Not always chronological
 - Not always your original goal
 - Discard all details that don't feed your message

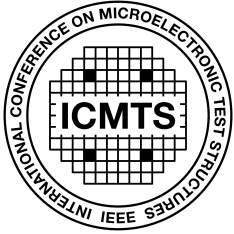


Know Your Main Message

- What ≤ 3 things do you want the audience to remember from your talk?
- Present only the work that leads to the conclusion(s)
 - Not always chronological
 - Not always your original goal
 - **Discard all details that don't feed your message**



Outline



- Introduction



- Making Presentation Slides

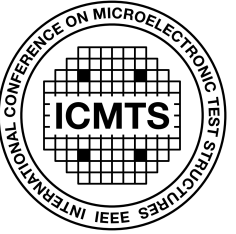


- Formatting Data to Maximize Impact



- Summary

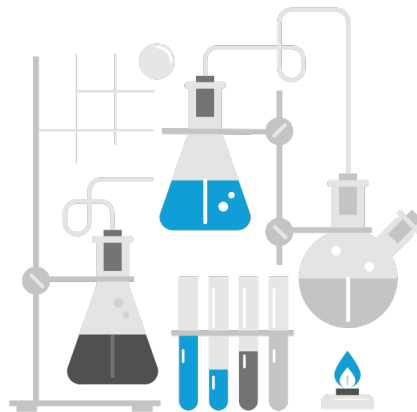
Slide Design



- Template
 - Use the template provided by your organization
 - ICMTS does not require any template
- Design your slides to be visible to the person in the back of the room
 - If the audience cannot read your slides, your message is lost
- Design your slides to complement your speech, not distract from it

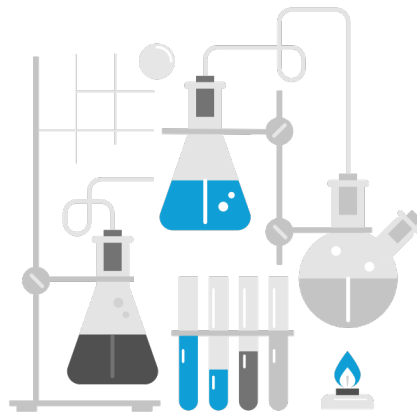
Slide Content

- Choose how much content (time) you want on each slide
 - Choose a pace that is comfortable
- A couple bullet points per slide can be effective
- Maybe add some graphics to complement your speech



Slide Content

- Choose how much content (time) you want on each slide
 - Choose a pace that is comfortable
 - A couple bullet points per slide can be effective
 - Maybe add some graphics to complement your speech
- Pages full of text are boring
 - If the audience is reading, they're not listening to you
 - If the audience is spending all its time reading the words on your overly-verbose slides, they are not paying attention to the incredibly interesting things that are probably saying even though it is possibly the most exciting presentation in the history of mankind
 - Are you still reading all this excessive content? You must be a very fast reader, indeed. And by now, you've totally forgotten what the speaker was saying, which was to not have too many words on your slides.



Slide Visibility: Fonts

44 pt

28 pt

- Minimum font size = 18 pt ... Go larger where possible
 - If your words don't fit with a large font, you have too many words
 - If the audience cannot read your slides, your message is lost
- Choose the “appropriate” font ... Pick one that's readable
 - Sans-serif vs. Serif vs. mono-spaced
 - Having multiple fonts is generally distracting
 - Exception: Code should use a mono-spaced font like **Lucinda Console** or **Consolas** or **Courier New**

24 pt

Aptos

Aptos
(sans-serif)

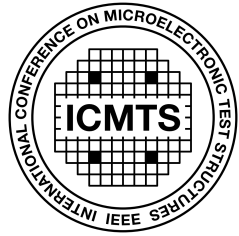
Times New Roman
(serif)

Consolas
(mono-spaced)

Slide Visibility: Font Size Example

- Road signs must be visible from a distance
- They are much larger than most people think
- Your slides must also be visible from a distance





Slide Visibility: Font Size Test

This is 32 pt text ... Can you read it in the back of the room?

This is 28 pt text ... Can you read it in the back of the room?

This is 24 pt text ... Can you read it in the back of the room?

This is 20 pt text ... Can you read it in the back of the room?

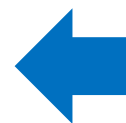
This is 18 pt text ... Can you read it in the back of the room?

This is 16 pt text ... Can you read it in the back of the room?

This is 14 pt text ... Can you read it in the back of the room?

This is 12 pt text ... Can you read it in the back of the room?

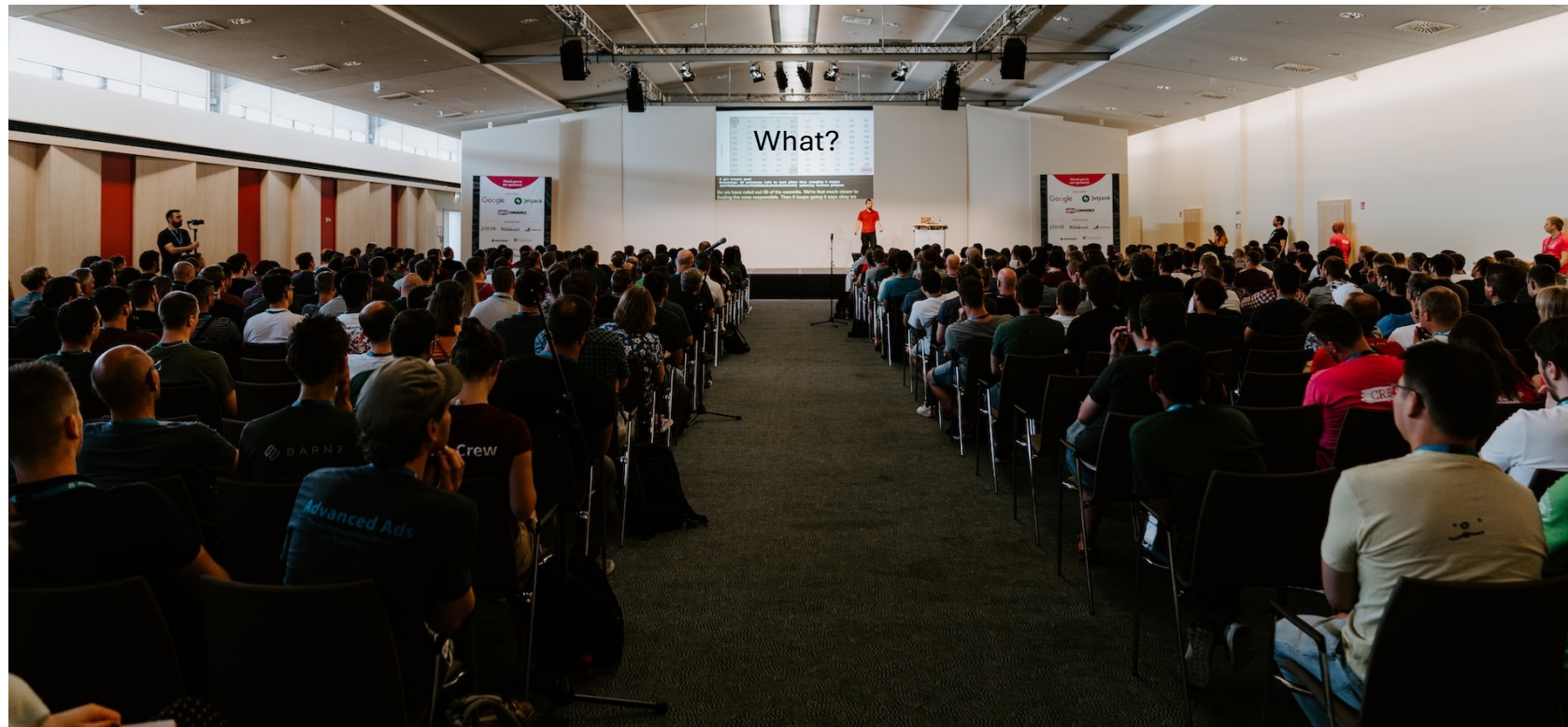
This is 10 pt text ... Can you read it in the back of the room?



Excel default font size is around here...

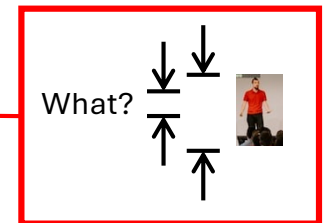
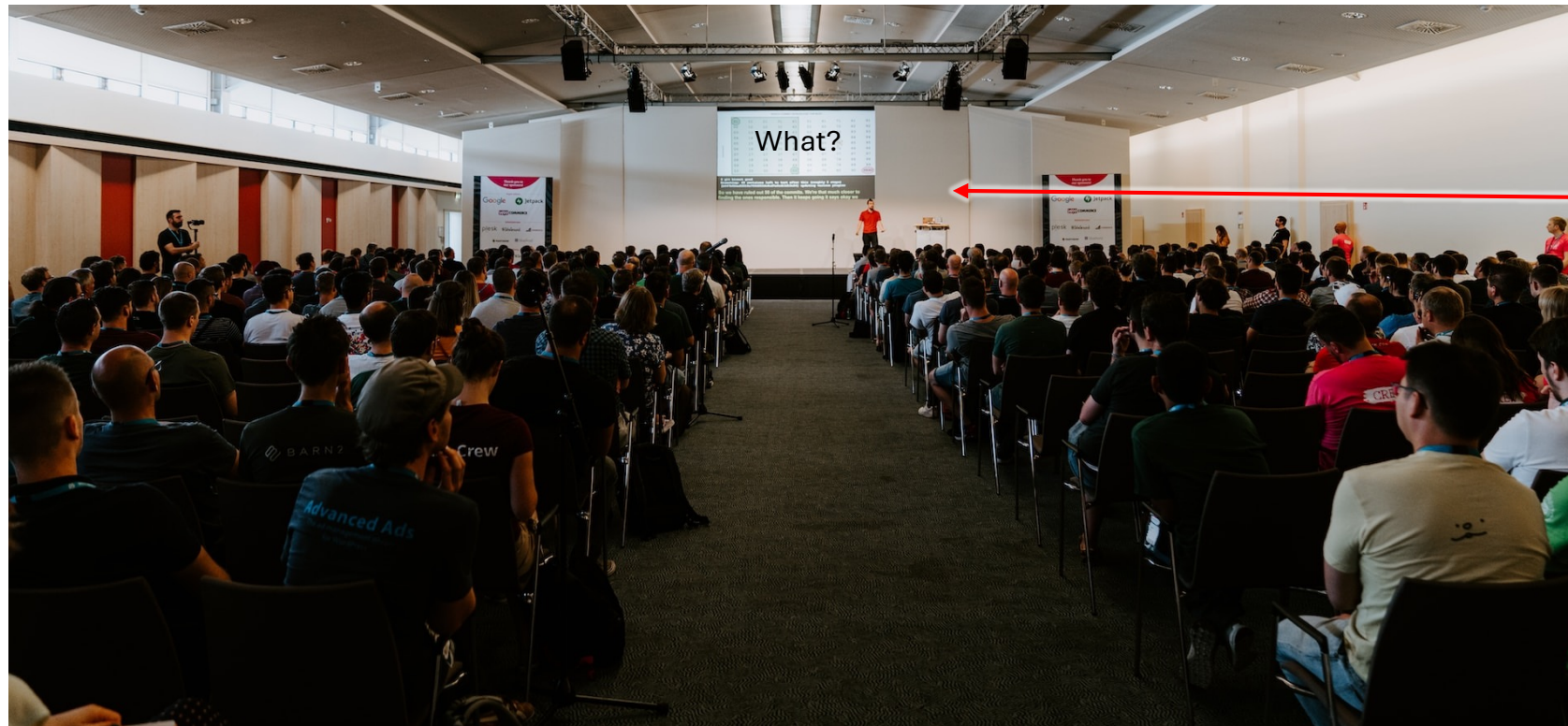
Slide Visibility: Font Size

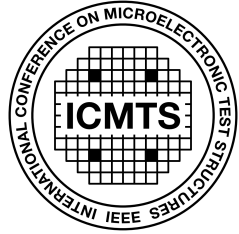
Are your slides readable from the back of the room?



Slide Visibility: Font Size

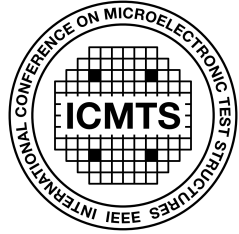
Are your slides readable from the back of the room?





Slide Visibility: Colors

- Colors should be used **sparingly** to emphasize a key point
 - Might also want to **bold**
 - Highlight one thing at a time
 - Over-use of color can be very distracting
 - Projectors often look very different than your laptop screen
 - Do not rely on subtle color differences
- Use high-contrast colors
 - Dark letters on white background is safer / easier than light on dark
- If the audience cannot read your slides, your message is lost
 - Can the person in the back of the room read your slides?

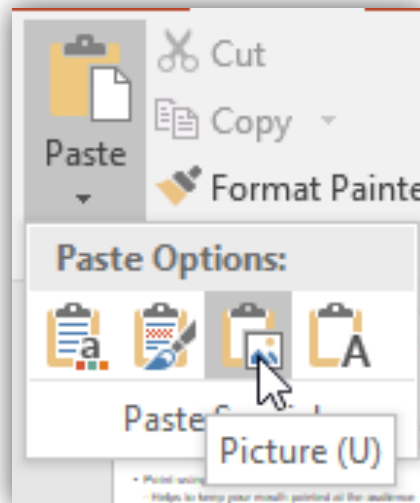
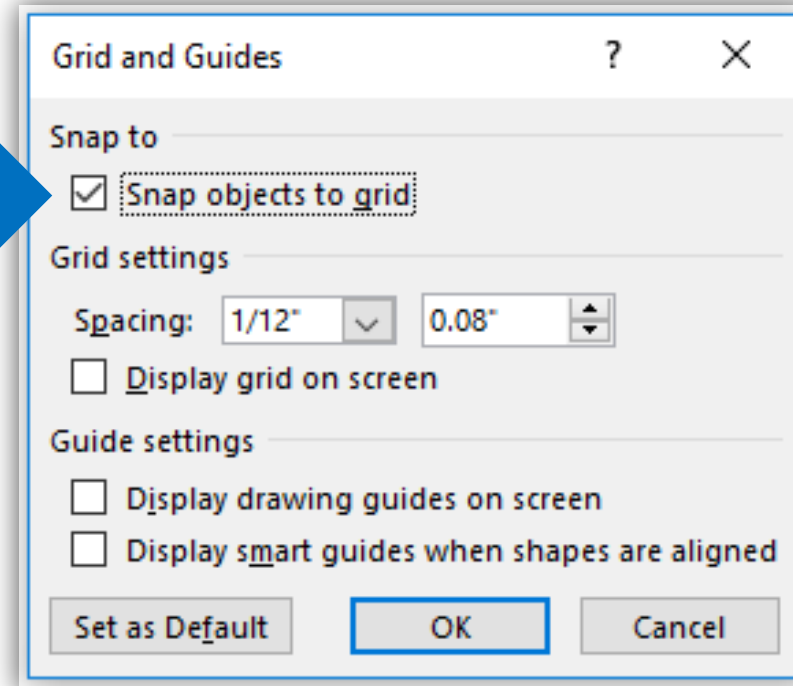


Test Your Slides

- View your slides using a projector
 - Likely to look differently than on your laptop
 - Every projector is different
- Make a slide to test how different font sizes, colors, *etc.* look on a projector from the back of the room
- Practice with an audience, get their feedback
- Stay within your time limit
 - Going too long makes you look unprepared

PowerPoint Hints

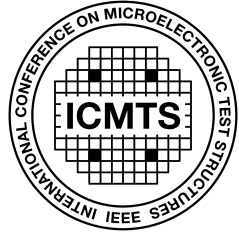
- Turn on View > Snap to Grid
- Always use Paste Picture, not Paste



Animation

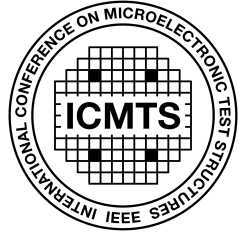
- PowerPoint can do lots of animation ... Use at your own risk!
 - Must feed your message, not distract from it
 - Lost when converting to PDF or paper
 - VERY easy to over-do animation...





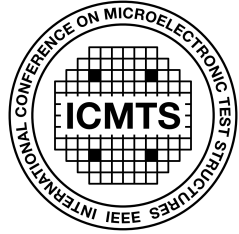
Fake Animation

- Sequential slides differ slightly, animation is done by changing slides
 - Non-changing elements should not move (distracting) → align carefully



Fake Animation

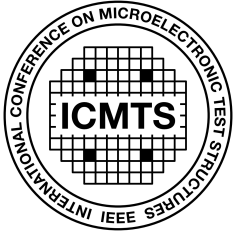
- Sequential slides differ slightly, animation is done by changing slides
 - Non-changing elements should not move (distracting) → align carefully
- Can be very effective for overlaying graphs
 - For example, simulations and measurements



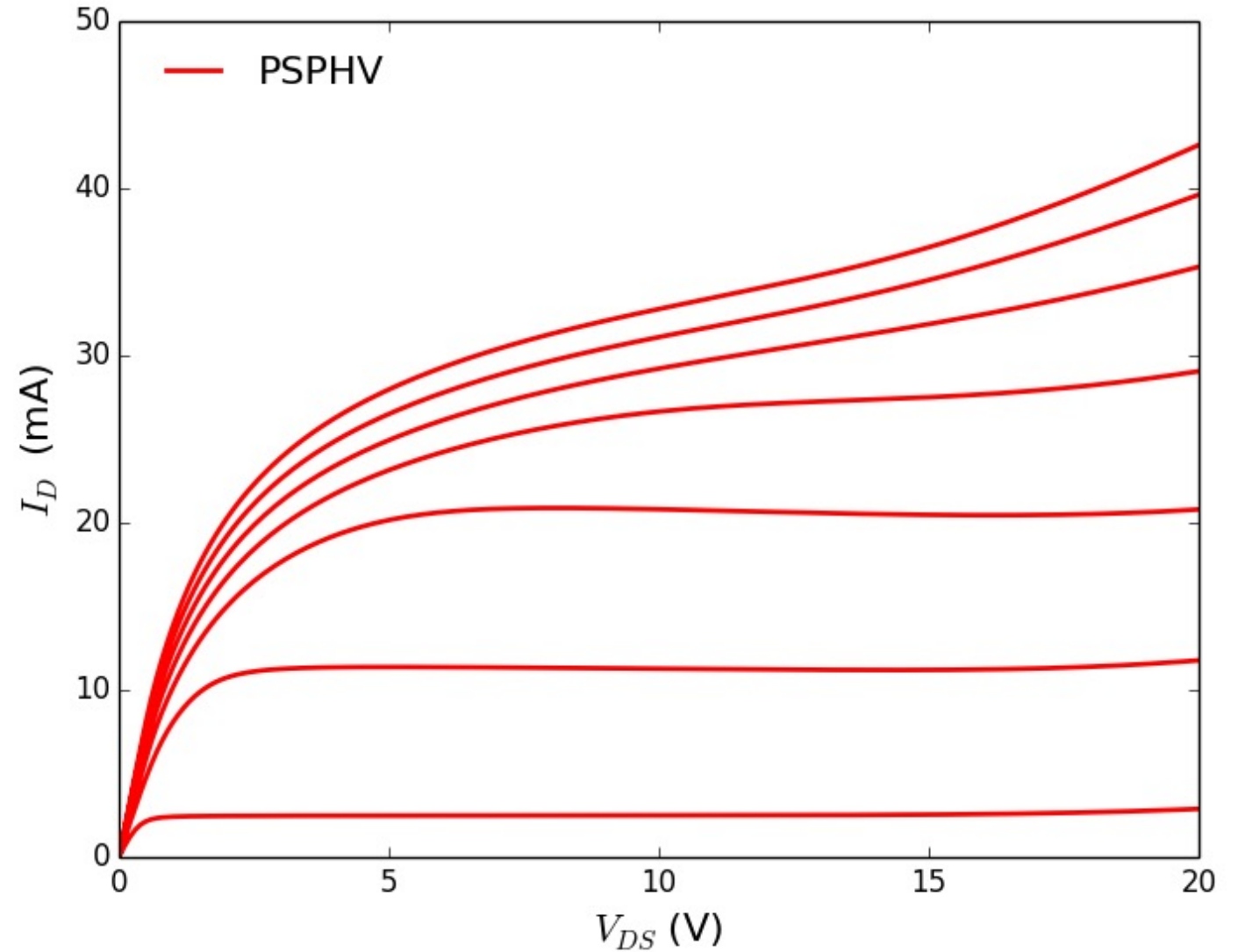
Fake Animation

- Sequential slides differ slightly, animation is done by changing slides
 - Non-changing elements should not move (distracting) → align carefully
- Can be very effective for overlaying graphs
 - For example, simulations and measurements
- “Fake animation” is reproduced in PDF and paper
 - PowerPoint animation is not

Example: “Fake Animation” for Graph Overlay



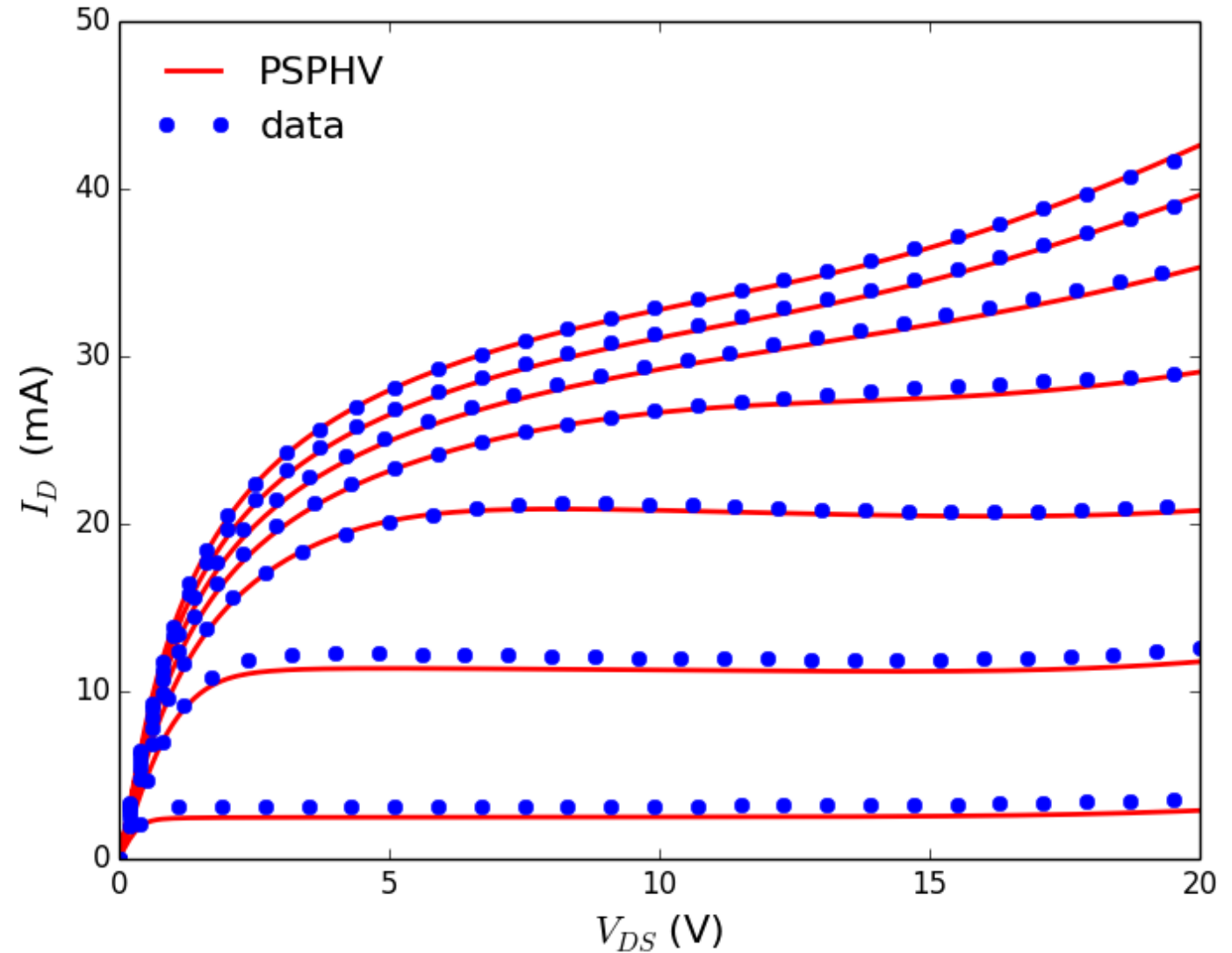
- Can use fake animation to separate overlays in a graph
- Exact placement = pretty transition

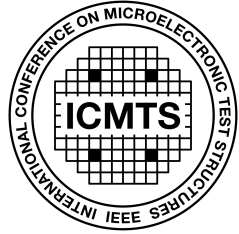


C. McAndrew

Example: “Fake Animation” for Graph Overlay

- Can use fake animation to separate overlays in a graph
- Exact placement = pretty transition

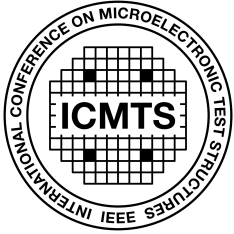




Example: “Fake Animation” for Graph Overlay

- Be sure you know where the animation ends...
- ... now you're distracted

Outline



- Introduction



- Making Presentation Slides



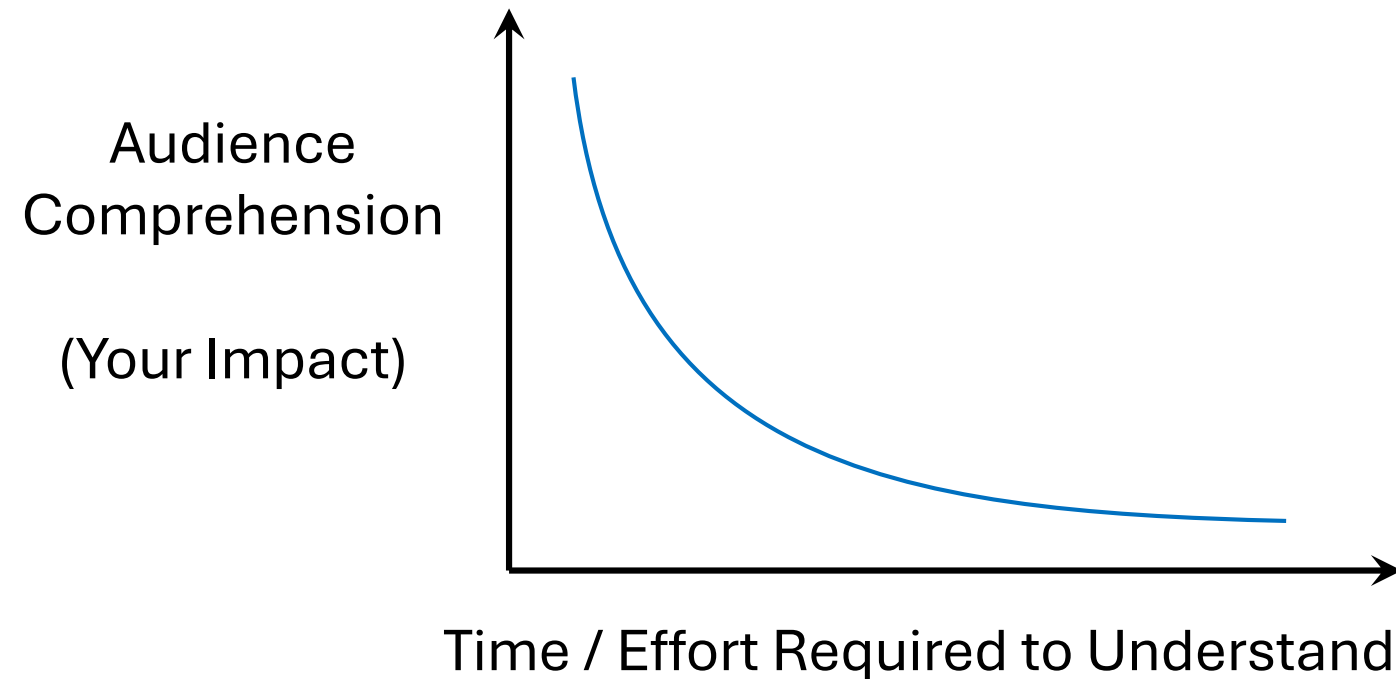
- Formatting Data to Maximize Impact



- Summary

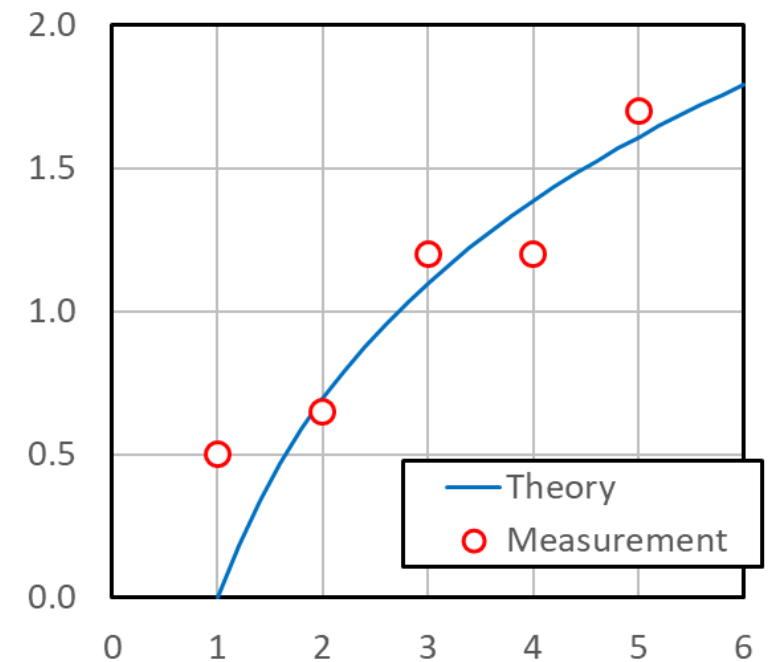
Maximize Your Impact

- Quicker understanding of your message = higher impact
 - You have some control over how much the audience absorbs
- Formatting for other people takes more work / time

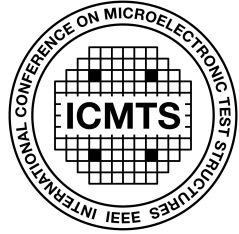


Graphs

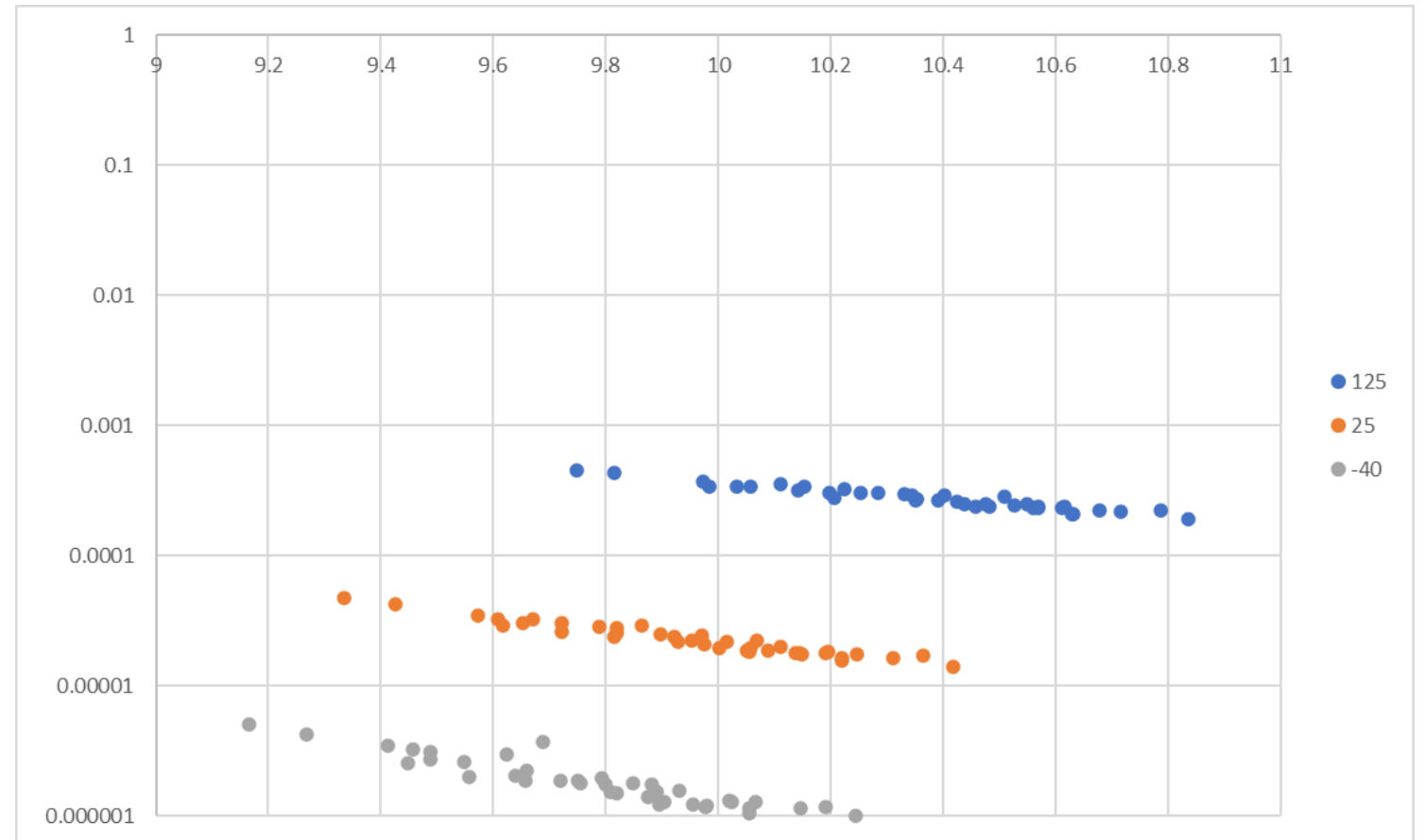
- Use gridlines only if helpful
 - Must clarify, not distract
- Use color where it's helpful
 - Must clarify, not distract
- Clearly label simulations vs. measurements
 - Symbols → measurements
 - Curves → simulations
 - For simulations, make a smooth curve
 - Fill in between the measured values
 - Go beyond the range of the measured values



Graphs

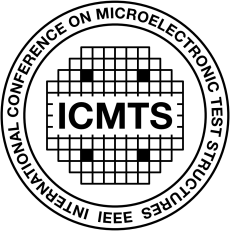
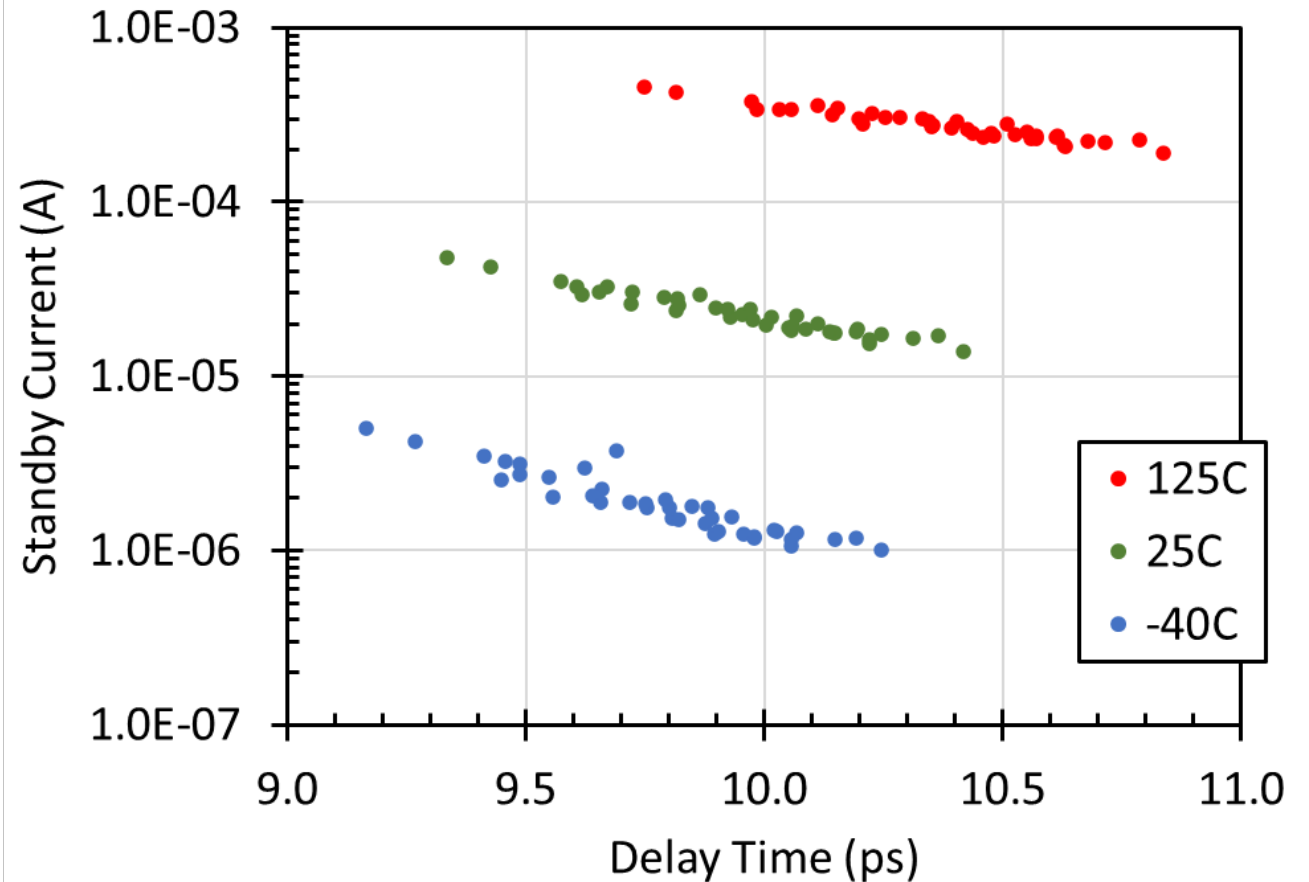


- Using Excel defaults...
 - Small font, grey color
 - Thin lines, grey color
 - Solid gridlines
 - Unhelpful number format
 - Border around the whole graph
 - No axis labels
- Fine for your personal use
- Will not convey your message



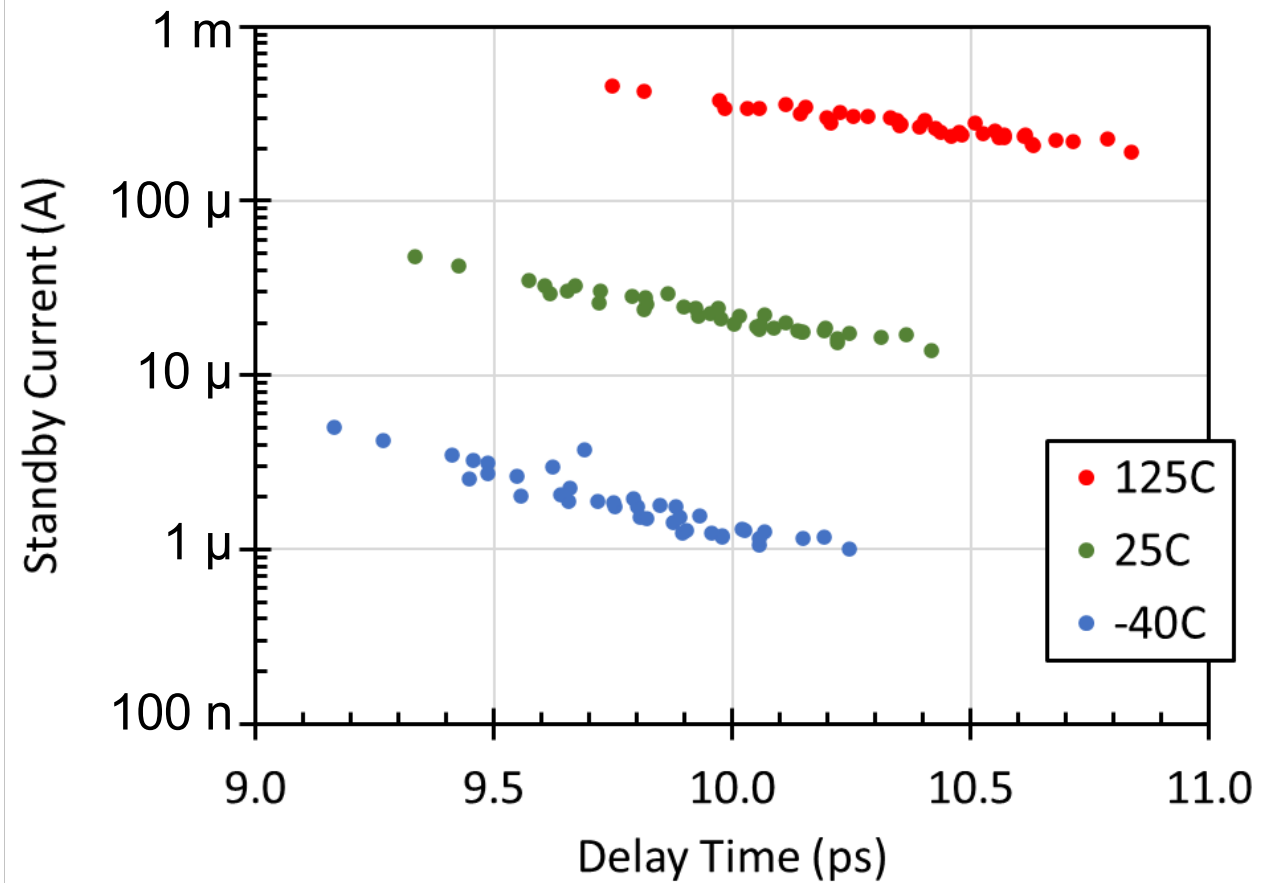
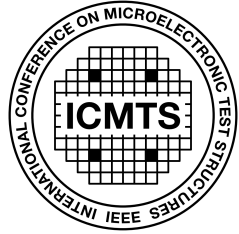
Graphs

- Improved format...
 - 18 pt fonts
 - Forced number formats
 - Higher-contrast colors
 - Red=hot, blue=cold
 - Legend
 - Moved to inside graph
 - White fill, black border
 - Thicker, black lines
 - Added axis labels with units
 - Added tick marks
 - Especially helpful for log scales



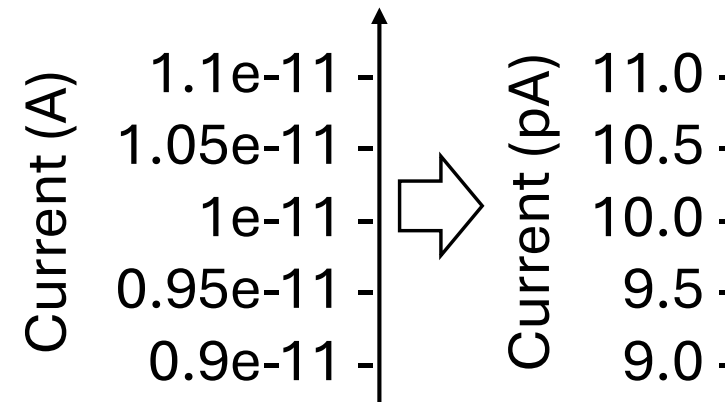
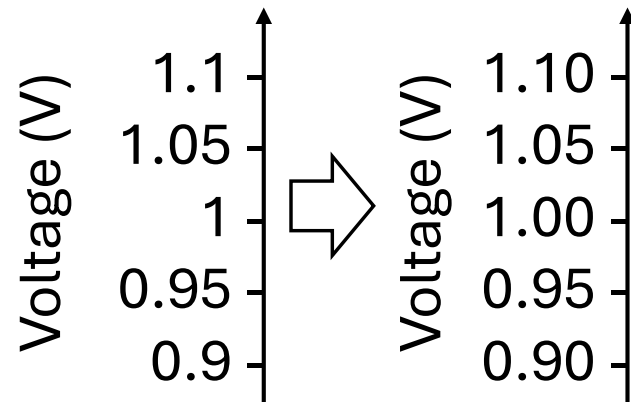
Graphs

- Slightly improved format...
 - Changed Y axis labels
- Again, not one “best” way
- Graphs should feed your message, not distract from it



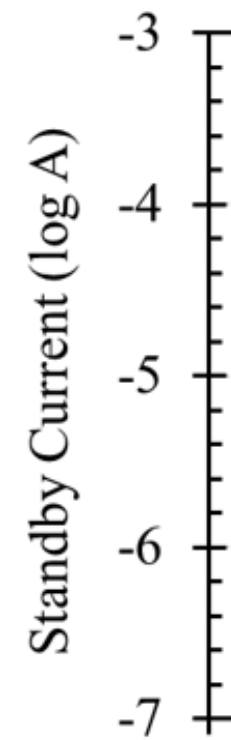
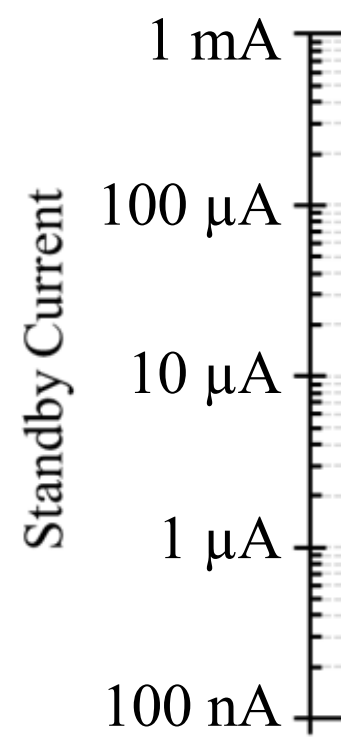
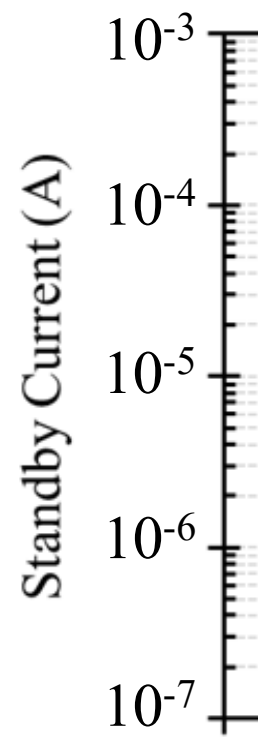
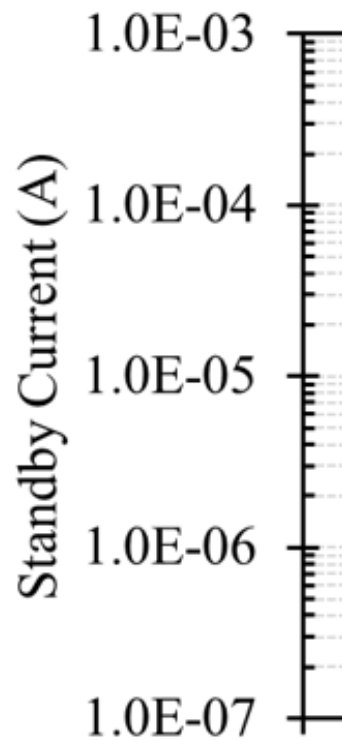
Graph Axes

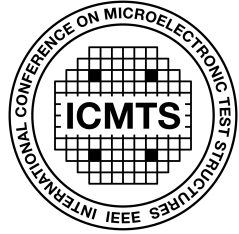
- Always force the number formats
 - Less distracting
 - As engineers we should know / care about significant digits
 - The graphing software defaults are rarely the best looking



Graph Axes

- Always add labels and specify the units on both axes
- For scientific numbers, consider using 10^x format or MKS units if possible





Tables

- Tables are never as effective as graphs
 - Can be OK for small quantities of data
- Especially difficult in a presentation
- Clearly label row/column headers
 - Usually helps to make them bold, slightly larger font

Ex: Ring Oscillator Measurements vs. Sims

- Conditional Formatting in Excel highlights two levels of “bad” values
- Conclusion:
 - Many parameters are out of spec, some worse than others
- Follow-up:
 - Nothing clear to the audience...

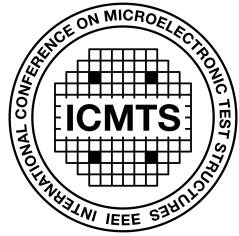
Description	Frequency (Hz)		
	Sim	Meas	% Diff
ron01a_b1_RO1	39912.71	52319.6	23.7%
ron01a_b1_RO2	29923.39	35438.81	15.6%
ron01a_b1_RO3	30555.92	36173.51	15.5%
ron01a_b1_RO4	29661.23	35289.29	16.0%
ron01a_b1_RO5	33804.7	43183.88	21.7%
ron01a_b1_RO6	62384.15	73160.68	14.7%
ron01a_b1_RO7	65784.75	76379.14	13.9%
ron01a_b1_RO8	68003.46	77368.79	12.1%
ron01a_b1_RO9	44197.86	55703.46	20.7%
ron01a_b1_RO10	31441.84	37820.56	16.9%
ron01a_b1_RO11	37303.85	41211.12	9.5%
ron01a_b1_RO12	36750.99	40220.87	8.6%
ron02a_b1_RO13	37178.29	47922.85	22.4%
ron02a_b1_RO14	28229.35	33851.95	16.6%
ron02a_b1_RO15	32727.46	37904.14	13.7%
ron02a_b1_RO16	36837.08	50965.6	27.7%
ron02a_b1_RO17	27759.04	33955.59	18.3%
ron02a_b1_RO18	28405.17	34376.08	17.4%
ron02a_b1_RO19	27652.74	33456.63	17.4%
ron02a_b1_RO20	31870.89	41282.6	22.8%
ron02a_b1_RO21	57036.64	69042.06	17.4%
ron02a_b1_RO22	61390.28	71871.23	14.6%
ron02a_b1_RO23	63373.66	73459.52	13.7%
ron02a_b1_RO24	40909.9	54835.46	25.4%

>20%
10-20%

Ex: Unreadable Table

- “You can’t read this but here’s what it says...”
 - If you hear yourself saying this, stop and re-think your approach

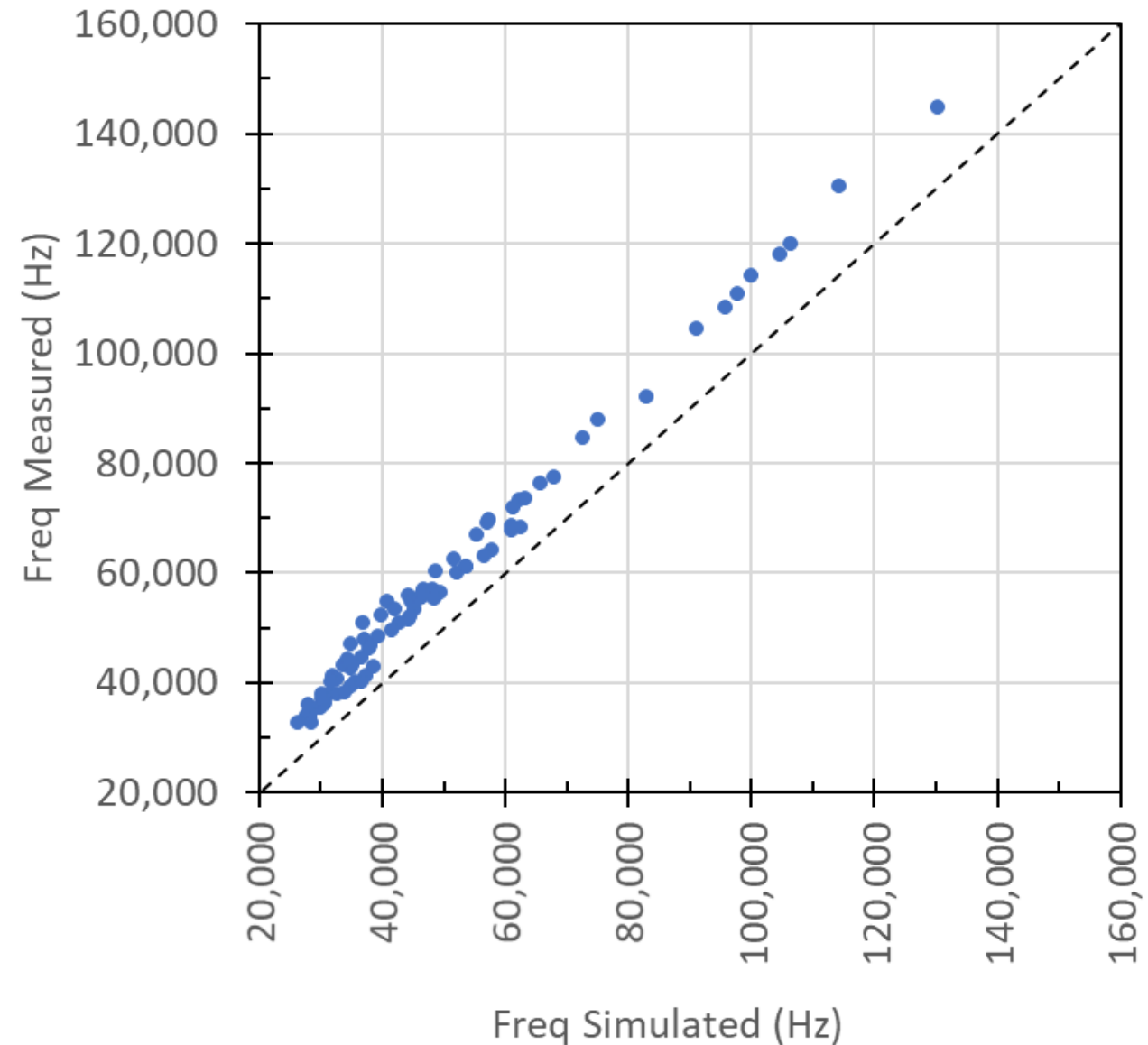
Description	Freq(Sim)	Freq(Sil)	% Diff
ron01a_b1_RO1	39912.71	52319.6	23.7%
ron01a_b1_RO2	29923.39	35438.81	15.6%
ron01a_b1_RO3	30555.92	36173.51	15.5%
ron01a_b1_RO4	29661.23	35289.29	16.0%
ron01a_b1_RO5	33804.7	41383.88	21.7%
ron01a_b1_RO6	62384.15	73160.68	14.7%
ron01a_b1_RO7	65784.75	76379.14	13.9%
ron01a_b1_RO8	68003.46	77368.79	12.1%
ron01a_b1_RO9	44197.86	55703.46	20.7%
ron01a_b1_RO10	31441.84	37820.56	16.9%
ron01a_b1_RO11	37303.85	41211.12	9.5%
ron01a_b1_RO12	36750.99	40220.87	8.6%
ron02a_b1_RO13	37178.29	47922.85	22.4%
ron02a_b1_RO14	28229.35	33851.95	16.6%
ron02a_b1_RO15	32727.46	37904.14	13.7%
ron02a_b1_RO16	36837.08	50965.6	27.7%
ron02a_b1_RO17	27759.04	33955.59	18.3%
ron02a_b1_RO18	28405.17	34376.08	17.4%
ron02a_b1_RO19	27652.74	33456.63	17.4%
ron02a_b1_RO20	31870.89	41282.6	22.8%
ron02a_b1_RO21	57036.64	69042.06	17.4%
ron02a_b1_RO22	61390.28	71871.23	14.6%
ron02a_b1_RO23	63373.66	73459.52	13.7%
ron02a_b1_RO24	40909.9	54835.46	25.4%
ron03a_b1_RO25	30518.03	35948.92	15.1%
ron03a_b1_RO26	35660.55	40076.87	11.0%
ron03a_b1_RO27	34956.71	39389.04	11.3%
ron03a_b1_RO28	34944.77	46932.23	25.5%
ron03a_b1_RO29	26332.75	32726.63	19.5%
ron03a_b1_RO30	30648.09	36193.41	15.3%
ron03a_b1_RO31	32625.87	40757.42	20.0%
ron03a_b1_RO32	48809.14	56065.59	12.9%
ron03a_b1_RO33	48343.22	56952.93	15.1%
ron03a_b1_RO34	46595.09	55447.11	16.0%
ron03a_b1_RO35	55324.66	67011.23	17.4%
ron03a_b1_RO36	99941.56	113992	12.3%
ron04a_b1_RO37	104721.84	117904.1	11.2%
ron04a_b1_RO38	106404.22	119902.9	11.3%
ron04a_b1_RO39	36692.71	44603.22	17.7%
ron04a_b1_RO40	53623.08	61156.7	12.3%
ron04a_b1_RO41	62490.53	68392.18	8.6%
ron04a_b1_RO42	60990.48	67586.17	9.8%
ron04a_b1_RO43	30199.96	37914.61	20.4%
ron04a_b1_RO44	45344.67	53330.19	15.0%
ron04a_b1_RO45	52272.25	60022.53	12.9%
ron04a_b1_RO46	30212.26	37119.14	18.6%
ron04a_b1_RO47	44275.67	51482.21	14.0%
ron04a_b1_RO48	44458.71	51901.96	14.3%
ron05a_b1_RO49	42865.11	50834.67	15.7%
ron05a_b1_RO50	51827.32	62398.42	16.9%
ron05a_b1_RO51	91159.87	104453.4	12.7%
ron05a_b1_RO52	95786.77	108338.7	11.6%
ron05a_b1_RO53	97785.41	110847.8	11.8%
ron05a_b1_RO54	35017.37	42635.98	17.9%
ron05a_b1_RO55	49595.64	56313.7	11.9%
ron05a_b1_RO56	57764.28	64114.64	9.9%
ron05a_b1_RO57	56652.82	62967.26	10.0%
ron05a_b1_RO58	28149.01	36082.84	22.0%
ron05a_b1_RO59	41695.4	49412.44	15.6%
ron05a_b1_RO60	48386.65	55332.96	12.6%
ros01a_b1_RO61	42027.42	53417.89	21.3%
ros01a_b1_RO62	35238.25	43210.15	18.5%
ros01a_b1_RO63	44919.96	54803.71	18.0%
ros01a_b1_RO64	19680.24	24421.66	19.4%
ros01a_b1_RO65	34028.14	38134.26	10.8%
ros01a_b1_RO66	72552.66	84448.67	14.1%
ros01a_b1_RO67	34425.26	44276.41	22.3%
ros01a_b1_RO68	57421.24	69741.69	17.7%
ros01a_b1_RO69	38124.85	46785.23	18.5%
ros01a_b1_RO70	31757.1	40047.52	20.7%
ros01a_b1_RO71	53732.32	61208.48	12.2%
ros01a_b1_RO72	114422.67	130459.1	12.3%
ros02a_b1_RO73	48748.13	60130.21	18.9%
ros02a_b1_RO74	46117.43	55180.49	16.4%
ros02a_b1_RO75	28425.6	32580.92	12.8%
ros02a_b1_RO76	46726.89	56851.15	17.8%
ros02a_b1_RO77	38643.29	42785.23	9.7%
ros02a_b1_RO78	82951.66	91899.35	9.7%
ros02a_b1_RO79	39321.54	48263.62	18.5%
ros02a_b1_RO80	75191.15	87974.21	14.5%
ros02a_b1_RO81	46443.71	56152.18	17.3%
ros02a_b1_RO82	37869.42	46108.25	17.9%
ros02a_b1_RO83	61075.28	68499.36	10.8%
ros02a_b1_RO84	130345.81	144739.1	9.9%



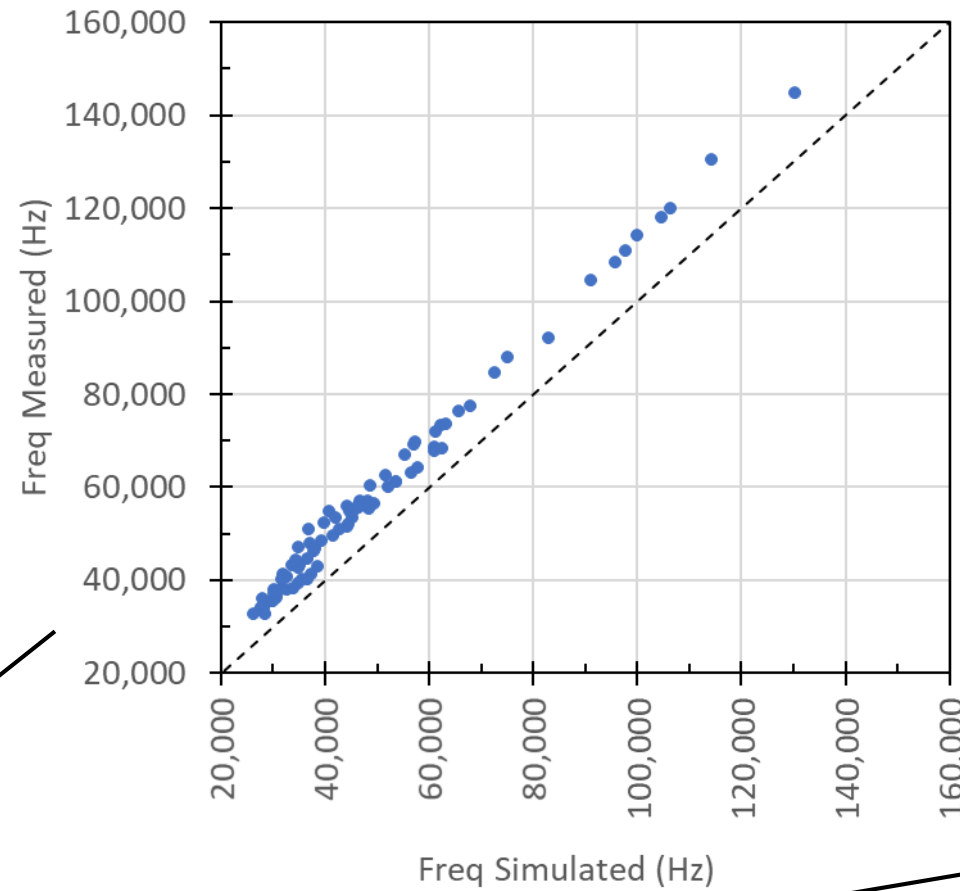
>20%
10-20%

Ex: Ring Oscillator Measurements vs. Sims

- Conclusion:
 - Measurements are uniformly shifted compared to simulations
- Follow-up:
 - Ask about the model accuracy
 - Ask if Si is on target
- The audience can see the conclusion immediately



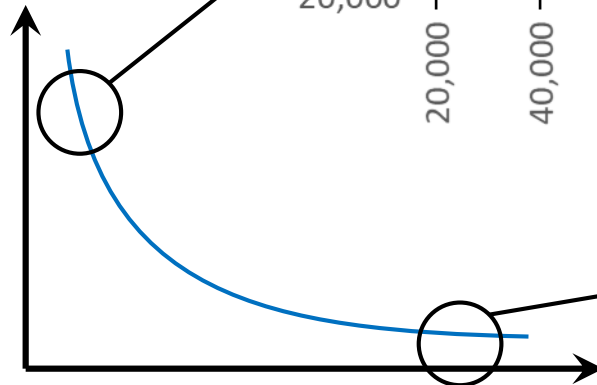
Ex: Ring Oscillator Measurements vs. Sims



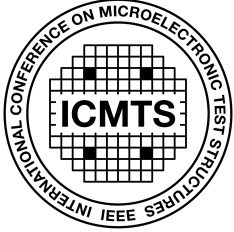
Description	Frequency (Hz)		
	Sim	Meas	% Diff
ron01a_b1_RO1	39912.71	52319.6	23.7%
ron01a_b1_RO2	29923.39	35438.81	15.6%
ron01a_b1_RO3	30555.92	36173.51	15.5%
ron01a_b1_RO4	29661.23	35289.29	16.0%
ron01a_b1_RO5	33804.7	43183.88	21.7%
ron01a_b1_RO6	62384.15	73160.68	14.7%
ron01a_b1_RO7	65784.75	76379.14	13.9%
ron01a_b1_RO8	68003.46	77368.79	12.1%
ron01a_b1_RO9	44197.86	55703.46	20.7%
ron01a_b1_RO10	31441.84	37820.56	16.9%
ron01a_b1_RO11	37303.85	41211.12	9.5%
ron01a_b1_RO12	36750.99	40220.87	8.6%
ron02a_b1_RO13	37178.29	47922.85	22.4%
ron02a_b1_RO14	28229.35	33851.95	16.6%
ron02a_b1_RO15	32727.46	37904.14	13.7%
ron02a_b1_RO16	36837.08	50965.6	27.7%
ron02a_b1_RO17	27759.04	33955.59	18.3%
ron02a_b1_RO18	28405.17	34376.08	17.4%
ron02a_b1_RO19	27652.74	33456.63	17.4%
ron02a_b1_RO20	31870.89	41282.6	22.8%
ron02a_b1_RO21	57036.64	69042.06	17.4%
ron02a_b1_RO22	61390.28	71871.23	14.6%
ron02a_b1_RO23	63373.66	73459.52	13.7%
ron02a_b1_RO24	40909.9	54835.46	25.4%

Audience
Comprehension
(Your Impact)

Time / Effort Required to Understand



Outline



- Introduction



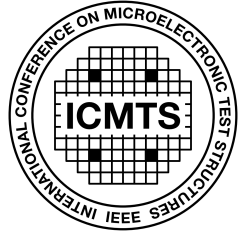
- Making Presentation Slides



- Formatting Data to Maximize Impact



- Summary



Three Things to Retain From This Talk

1. Visibility Visibility Visibility

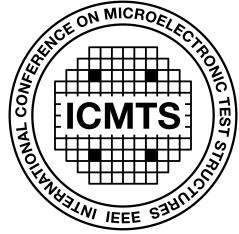
- 18+ pt fonts, high contrast colors, ...

2. Stay on Message

- Do not distract with colors, fonts, animation, extra information

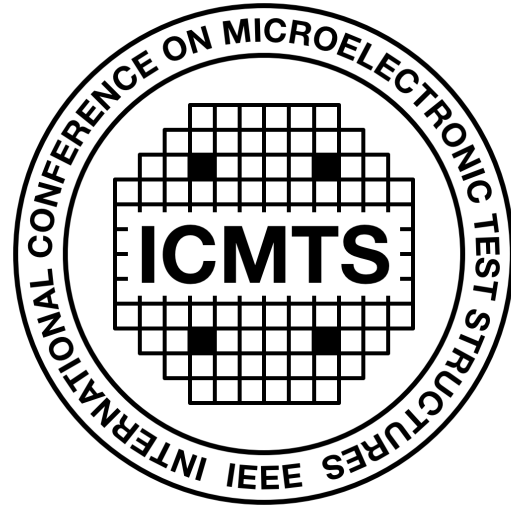
3. There is more than one “good” way to give a presentation

- Find a style that is comfortable for you and stays within your time limit



Useful Links

- https://guykawasaki.com/the_102030_rule
- <https://www.presentationzen.com>
- “What is your key message? What is it you REALLY want people to remember?”
- <http://wittcom.com/how-to-plan-a-technical-presentation/>
- “Knowing who you’re talking to – your audience – is as important as knowing what you’re talking about...”
- <http://wittcom.com/how-to-improve-a-technical-presentation/>
- “State your conclusion up front. Then present your supporting data and explain your reasoning.”
- <https://www.hanselman.com/blog/11TopTipsForASuccessfulTechnicalPresentation.aspx>
- “For the Love of All That Is Holy, FONT SIZE, People”
- <https://buildingenergy.cx-associates.com/2013/02/effective-presentations-12-tips-for-engineers-dont-laugh/>
- “DON’T show me a screenshot of the ENTIRE SPREADSHEET you used ... and then start by saying ‘this isn’t meant to be legible’”.
- <https://www.linkedin.com/pulse/20140904170930-15291682-5-tips-for-giving-effective-technical-presentations/>



Thanks for watching
and have a great talk!