



UNIVERSITÉ DE
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PPMPMPMPMPMPMPMPMPMPMP05

Comment se déplace un signal?

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Par: Pascal-Emmanuel Lachance &
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- Où l'impédance est la plus faible?
- ↻ Retour de courant
- Vitesse de déplacement d'un signal
- ⚡ Tout est une ligne de transmission

Level 1: Surface Ripple [20min]

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 - EM Fields I [10min - Max]
 - Superposition I [1min - Max]
 - Charge Movement [4min - Max]
 - Harmonics I [3min - Max]
- Level 2: Current Paths [30min - 50min]

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- Level 1: Surface Ripple [20min]
- Level 2: Current Paths [30min - 50min]
 - Signal Source I [2min - Pascal]
 - Propagation Speed [5min - Pascal]
 - Ground planes [5min - Pascal]
 - Current loops [5min - Pascal]
 - Induction [5min - Pascal/Max]
 - Radiation I [3min - Max]
 - Fil d'une année lumière de long [5min - Pascal]
- Level 3: Impedance & Reflection [20min - 1h10]

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- Level 2: Current Paths [30min - 50min]
- Level 3: Impedance & Reflection [20min - 1h10]
 - Signal Source II [5min - Pascal]
 - Impédances [5min - Pascal]
 - Transmission Line [5min - Pascal]
 - Impedance Mismatch [5min - Pascal]
 - Réflexion [5min - Pascal]
- Level 4: Noise [27min - 1h37]

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- Level 3: Impedance & Reflection [20min - 1h10]
- Level 4: Noise [27min - 1h37]
 - Decibel Review [5min - Max]
 - Signal Source III [4min - Max]
 - Noise Spectrum [2min - Max]
 - Harmonics II [3min - Max]
 - Signal to Noise Ratio (SNR) [5min - Max]
 - Jitter [5min - Pascal]
 - Eye diagram [5min - Pascal]
- Level 5: Crosstalk & Coupling [18min - 1h55]

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- Level 4: Noise [27min - 1h37]
- Level 5: Crosstalk & Coupling [18min - 1h55]
 - Radiation II [3min - Max]
 - Differential Pairs [5min - Pascal]
 - Far crosstalk [5min - Pascal]
 - Near crosstalk [5min - Pascal]
- Level 6: Basic Building Blocks [12min - 2h07]

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- Level 5: Crosstalk & Coupling [18min - 1h55]
- Level 6: Basic Building Blocks [12min - 2h07]
 - Signal Source IV [5min - Max]
 - Waveguide I [5min - Pascal]
 - Filters [2min - Max]
- Level 7: Field lines and Fringes [20min - 2h27]

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- Level 6: Basic Building Blocks [12min - 2h07]
- Level 7: Field lines and Fringes [20min - 2h27]
 - Waveguide III [5min - Pascal]
 - Skew, loss [5min - Pascal]
 - Skin effect [5min - Pascal]
 - EMI [5 min - Pascal]
- Level 8: Dielectric Depths [26min - 2h49]

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- Level 7: Field lines and Fringes [20min - 2h27]
- Level 8: Dielectric Depths [26min - 2h49]
 - Conduction [3min - Max]
 - Loss tangent [3min - Max/Pascal]
 - Frequency-dependant resistances [5 min - Pascal]
 - Current Bunching [3min - Max/Pascal]
 - Stackup [10min - Pascal]
 - Dispersion [2min - Max]
- Bonus Level 9: Advanced Building Blocks [17min - 3h06]

Fin officiel du PPMPMPMPMPMPMPMPMPMPMP05. Le reste c'est pour les crinqué

Bonus Level 9: Advanced Building Blocks [17min - 3h06]

- Level 8: Dielectric Depths [26min - 2h49]
- Bonus Level 9: Advanced Building Blocks [17min - 3h06]
 - Signal Source V [2min - Max]
 - Waveguide II - [5min - Pascal]
 - Stubs [2min - Max]
 - Coupler [2min - Max]
 - Resonator [2min - Max]
 - Antennas [4min - Max]
- Bonus Level 10: Waveform Abyss [12min - 3h18]

Bonus Level 10: Waveform Abyss [12min - 3h18]

- Bonus Level 9: Advanced Building Blocks [17min - 3h06]
- Bonus Level 10: Waveform Abyss [12min - 3h18]
 - Modulation [3min - Max]
 - Mixing [2min - Max]
 - Superposition II [5min - Max]
- Bonus Level 11: S-Parameters and Smith Charts [17min - 3h35]

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- Bonus Level 10: Waveform Abyss [12min - 3h18]
- Bonus Level 11: S-Parameters and Smith Charts [17min - 3h35]
 - S parameters [5min - Pascal]
 - Smith Charts [5min - Pascal]
 - Impedance Matching Network [5min - Pascal]
 - Standing Waves [2min - Max]
- Bonus Level 12: Non-linearity Valley [14min - 3h49]

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- Bonus Level 11: S-Parameters and Smith Charts [17min - 3h35]
- Bonus Level 12: Non-linearity Valley [14min - 3h49]
 - Superposition III [3min - Max]
 - Distortion harmonique [5min - Max]
 - Intermodulation [3min - Max]
 - Crossmodulation [3min - Max]
- Bonus Level 13: Infrared Chasm [10min - 3h59]

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- Bonus Level 12: Non-linearity Valley [14min - 3h49]
- Bonus Level 13: Infrared Chasm [10min - 3h59]
 - When the equations fails [5min - Max]
 - Electron vibration frequency [2min - Max]
 - Blackbody Radiation [3min - Max]
- Final Boss: Integrated Photonics [18min - 4h17]

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- Bonus Level 13: Infrared Chasm [10min - 3h59]
- Final Boss: Integrated Photonics [18min - 4h17]
 - RF Blocks can also be used to guide light [5min - Max]
 - We can make circuits with light [3min - Max]
 - We can manipulate light using Electrical Signals [5min - Max]
 - We can use photonics to generate and manipulate Microwave Signals [5min - Max]



Merci!

Prochain PPMPP

Bonnes pratiques de design

- Comment choisir ses composants et optimiser son BOM?
- Comment bien concevoir un symbole et un footprint?
- Bonnes pratiques de schémas
- Bonnes pratiques de layout
- Communication avec fabricants, assembleurs et programmeurs

