Remote Bias Electrostatic Force Microscopy: Seeing the Invisible

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Atomic Force Microscopy
Remote Bias
Electrostatic Force Microscopy

Electric Potential

\( \mu \text{m} \)

\( V \)

\( V_{AC}, F_0 \)
Motivation and Goals

• Back End of Line Testing

• Tip characterization

• Standard Structure
Computational Work
\[ F(z, t) = -\frac{1}{2} \left[ (V_{CPD} - V_{DC}) + V_{AC} \sin(\omega t) \right]^2 \frac{dC(z)}{dz} \]
Theory’s Limitations
Experimental Work
Tip Response over Eight Buried Lines

Y Component (V)

x position (µm)
Conclusion

• Theory and modeling
• Instrumentation documentation
• RB-EFM Demonstrated
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References:
