Kaptiza Resistance and Elastic Phonon Scattering at Grain Boundary Interfaces in Silicon

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*Letter 1
edited.*

Introduction

Research Objectives

Modeling of Si Grain Boundaries

Kaptiza Resistance of Si GBs

Elastic Phonon Scattering at Silicene

Results and Discussion

Summary and Future Scope

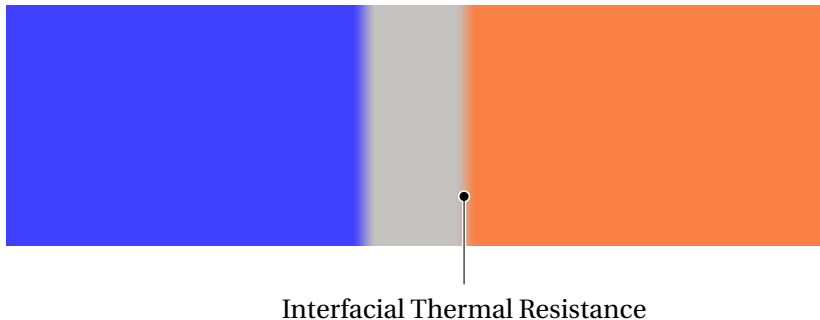# Introduction

Interfacial Thermal Resistance

Interfacial Thermal Resistance

Figure 1: Schematic representation of thermal contact resistance between two dissimilar materials

Interfacial Thermal Resistance: Phonon Scattering

Is This a Real Life?

Is this a fantasy?

Research Objectives

TABLE 1   How to use this course?

1. Setup your study table
2. Watch the short lecture
3. Solve essential problems
4. Verify your answer
5. Revise your notes and document
6. More problems

Exam Pattern

Section	Questions
PART-I	20
PART-II	20
PART-III	60
TOTAL	100

Table 2: Exam pattern

1. No blueprint
2. Negative marking scheme
3. 1.2 min per question

Modeling of Si Grain Boundaries

Syllabus

1. Determinants and Matrices

1. Solving system of equations
2. Rank of the Matrix
3. Eigenvalues and eigenvectors
4. Reduction of quadratic form to canonical form

Syllabus

2. Calculus and Differential Equations

1. Partial derivatives
2. Jacobians
3. Taylor's expansion
4. Maxima and Minima.
5. Linear ordinary differential equations with constant coefficients
6. Simultaneous first order linear equations with constant coefficients.
7. Formation of partial differential equation (PDE)
8. Solution of first order PDE
9. Solution of linear higher order PDE with constant coefficients.

3. Vector Calculus

1. Double and triple integrations and their applications
2. Gradient, Divergence, Curl and Laplacian
3. Green's, Gauss divergence and Stroke's theorem.

4. Functions of Complex Variables and Complex Integration

1. Analytic functions
2. Conformal Mapping
3. Bilinear transformation
4. Cauchy's integral theorem and integral formula
5. Taylor and Laurent Series
6. Singularities
7. Residues
8. Residue theorem and its applications.

5. Transforms

1. Laplace Transform
2. Inverse transforms
3. Application to solution of linear ordinary differential equations with constant coefficients.
4. Fourier integral theorem
5. Fourier transform pair
6. Sine and Cosine transforms
7. Z-transform
8. Inverse Z-transform
9. Solution of difference equations using Z-transform.

6. Numerical Methods

1. Solution of linear system by direct and iterative methods
2. Interpolation and approximation
3. Numerical Differentiation and Integration
4. Solving Ordinary Differential Equations

7. Applied Probability

1. Probability and Random variables
2. Standard Discrete and Continuous distribution
3. Moments
4. Moment generating function and their properties.
5. Two-Dimensional Random Variables
6. Covariance
7. Correlation and Regression.

Preparation Tips

(a) Right Mindset
(b) Meditiation / Water
(c) Be Consistent

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Resources

1. onlinetangedco.com
2. Page → Download Notes
3. Sign-up → Online Test(free)
4. One Standard Text Book(not mandatory)
5. elankovanmg@gmail.com

Thank you!

Acknowledgement

list goes here

there goes a list