Algebraic and transcendental equations

1. To find the roots of an equation(algebraic or transcendental) by Bisection Method.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)
2. To find the roots of an equation(algebraic or transcendental) by Secant Method.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)
3. To find the roots of an equation(algebraic or transcendental) by Newton-Raphson Method.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)

Linear Equations & Eigenvalue Problem

1. To find the roots of linear equations by Gauss Elimination Method.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)
2. To find the roots of linear equations by Gauss Seidel Iterative Method.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)
3. To find the eigen value and eigen vector of matrix by iterative method.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)

Interpolation:

1. To find the forward difference table from a given set of data values.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)
2. To find the backward difference table from a given set of data values.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)

Curve fitting

1. To fit a straight line to a given set of data values.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)
2. To fit a polynomial to a given set of data values.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)
3. To fit an exponential function to a given set of data values.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)

Differentiation

1. To find the first and second derivatives near the beginning of the table values of (x,y).
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)
2. To find the first and second derivatives near the end of the table values of (x,y).
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)

Integration

1. To evaluate a definite integral by trapezoidal rule.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)
2. To evaluate a definite integral by Simpson's 1/3 Rule.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)
3. To evaluate a definite integral by Simpson's 3/8 Rule.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)
4. To evaluate a definite integral by Gauss Quadrature Rule.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)

Differential Equations

1. To solve a differential equation by Euler's Method.
   Links: *C++ Program* *Lab Write-Up*(Flow-Chart and Algorithm)
2. To solve a differential equation by Modified Euler's Method.

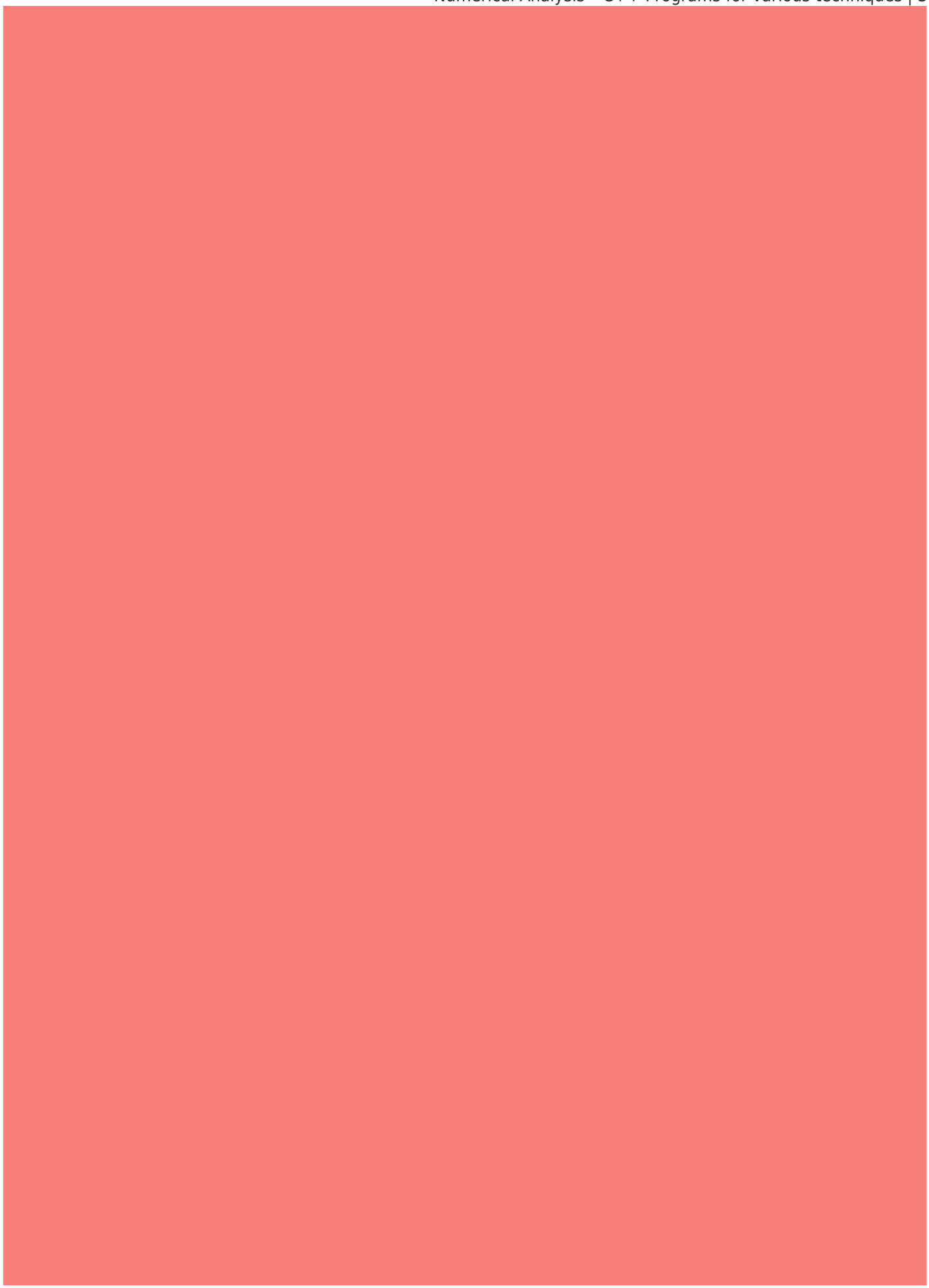
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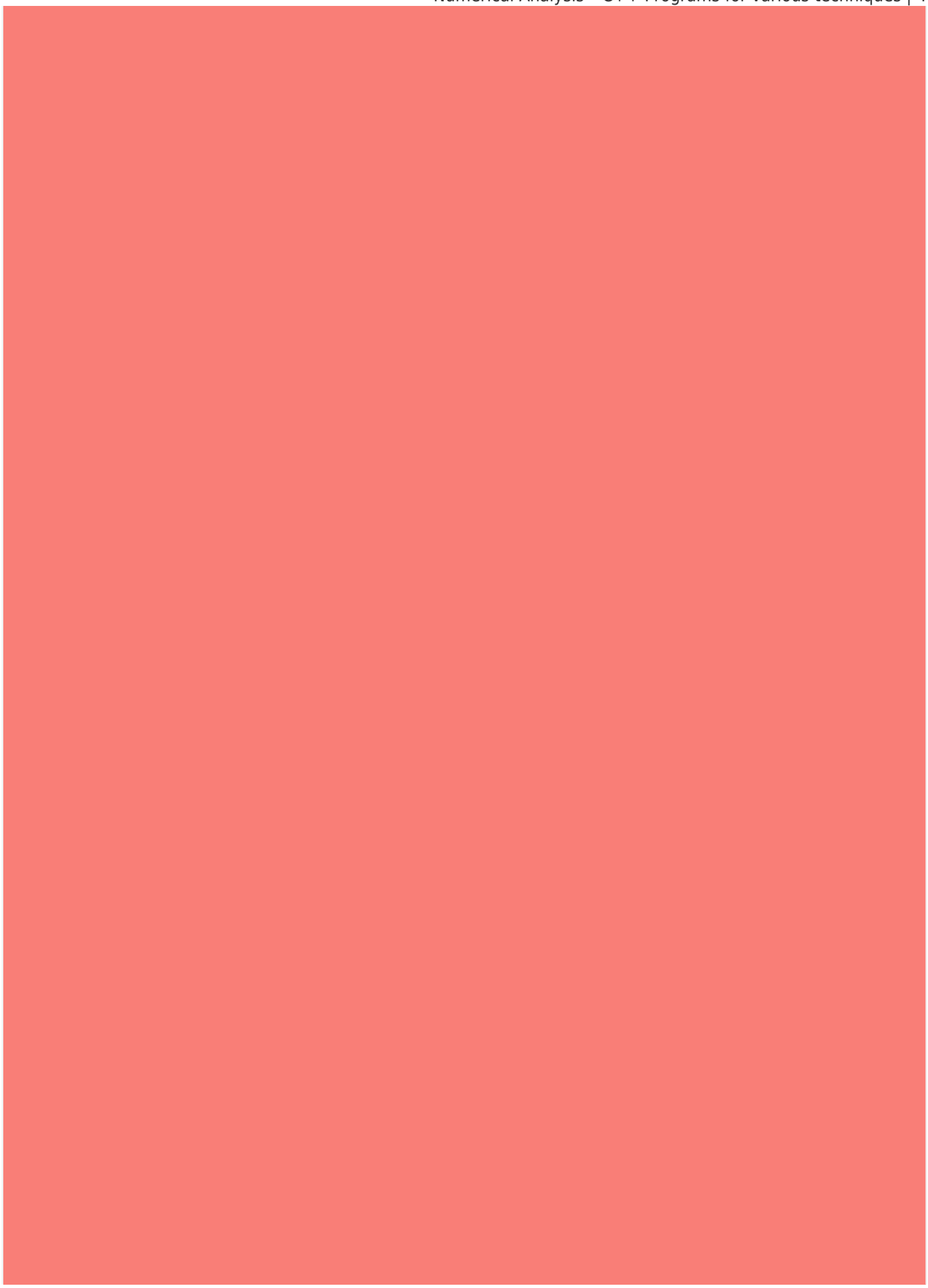


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I'm a physicist specializing in computational material science with a PhD in Physics from Friedrich-Schiller University Jena, Germany. I write efficient codes for simulating light-matter interactions at atomic scales. I like to develop Physics, DFT, and Machine Learning related apps and software from time to time. Can code in most of the popular languages. I like to share my knowledge in Physics and applications using this Blog and a YouTube channel.

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