Computational Electromagnetics and Applications
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Summary of Week 6

We have covered one of the most important methods namely the finite element method in this week's lectures

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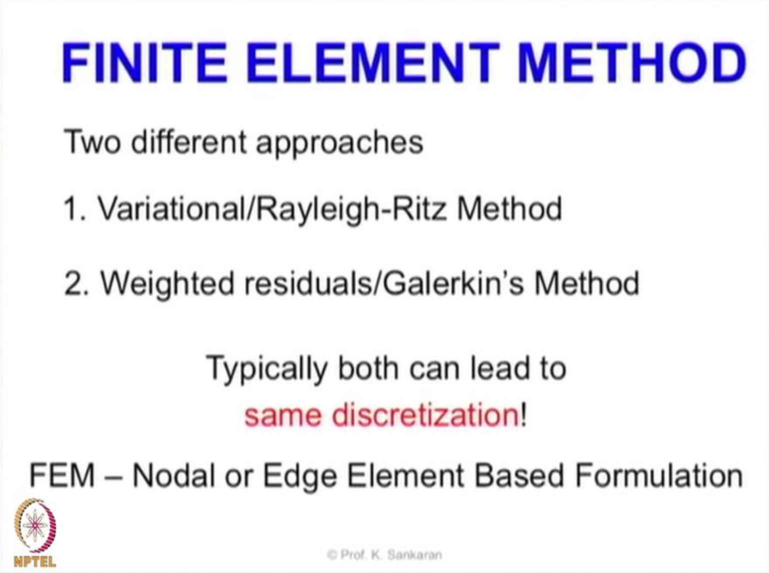

We started with the mathematical formulation of the finite element method. We revisited some of the approaches that we introduced in the earlier lectures namely the Raleigh Ritz Method, Weighted Residual method and Galerkin method.

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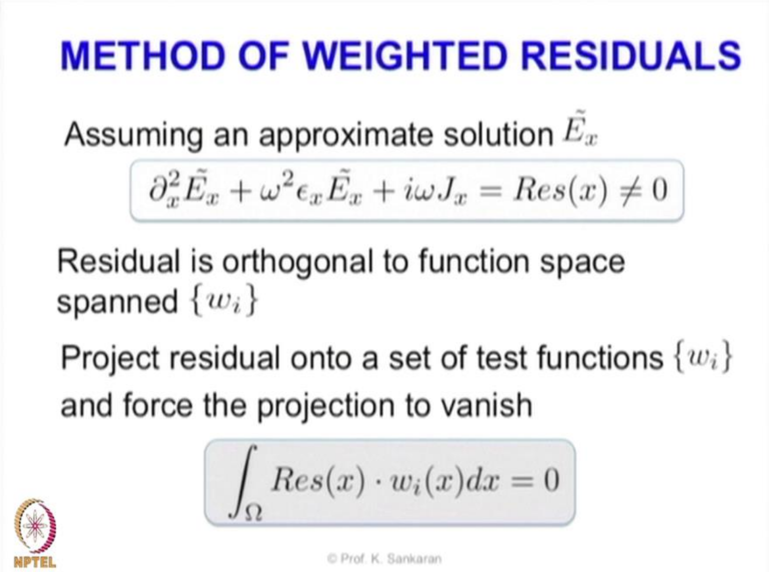

Our attention was focused on the nodal based formulation of the finite element method using Weighted Residuals.

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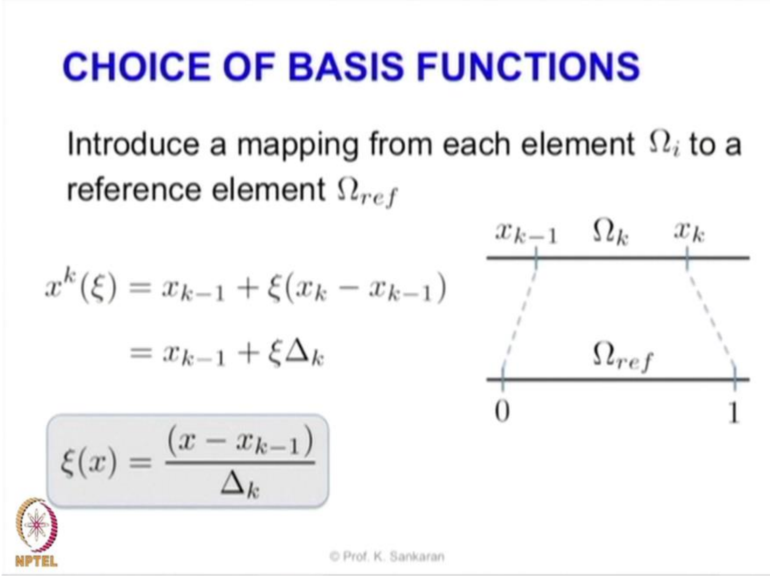

Later we discussed about the choice of the basis functions.

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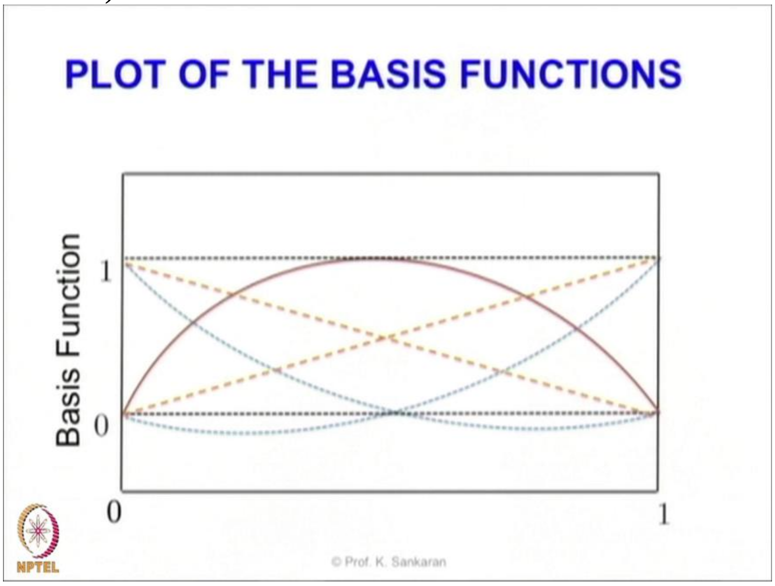

Showing some linear and quadratic examples.

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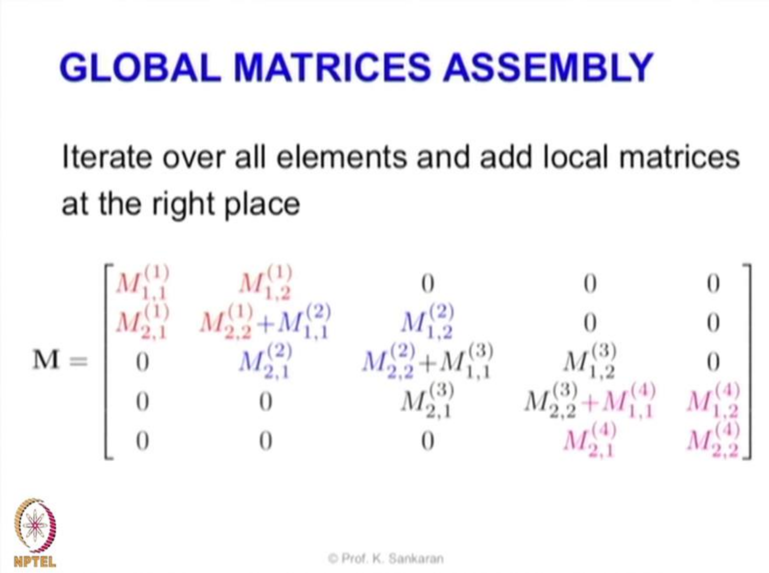

We also showed how one can build the Global Stiffness Matrix from the local element information.

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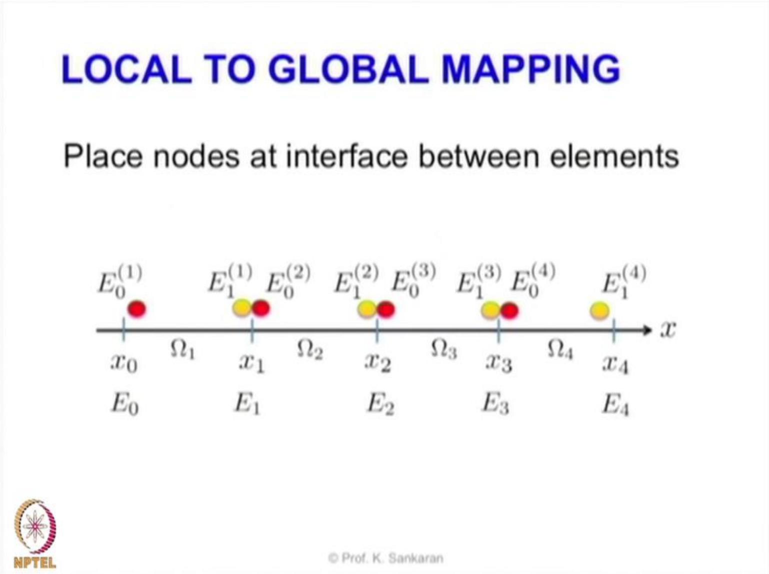

Through the local to global mapping procedure.

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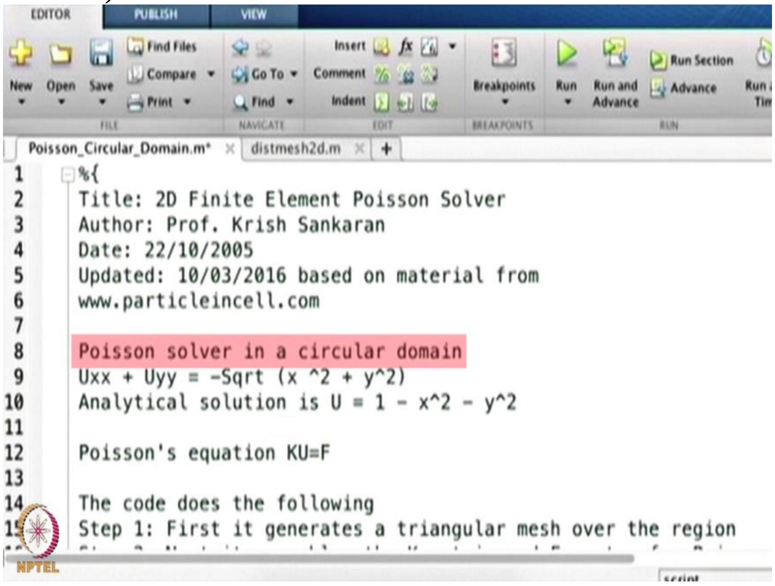

We also demonstrated numerical FEM simulations for solving 2D Poisson Equations.

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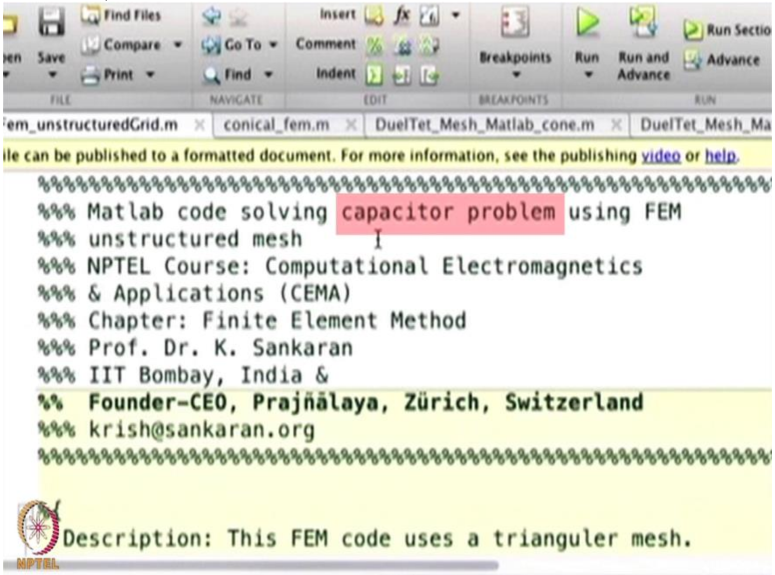

Later we also modelled a parallel plate capacitor by finding the solution to the 2D Laplace equation using finite element method.

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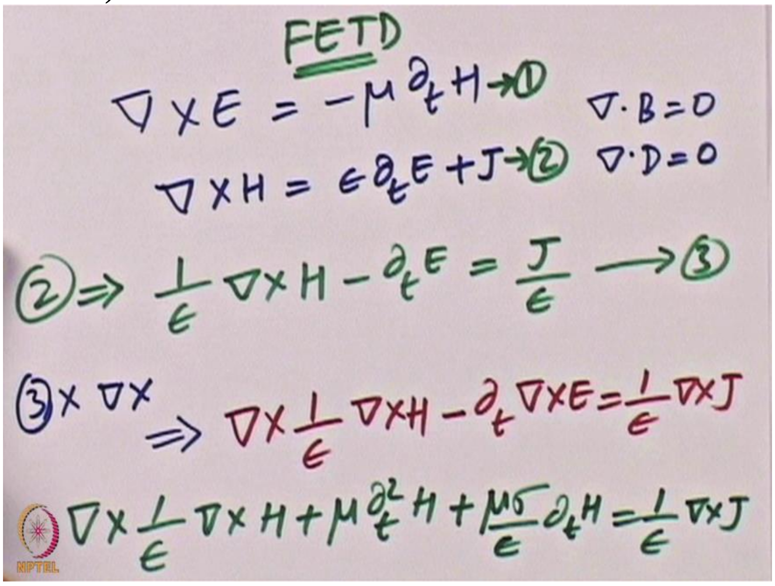

We also step by step derived the FEM formulation for solving Maxwell equations in time domain. We discussed the frequency domain formulation for solving Maxwell Equation in the Finite element method.

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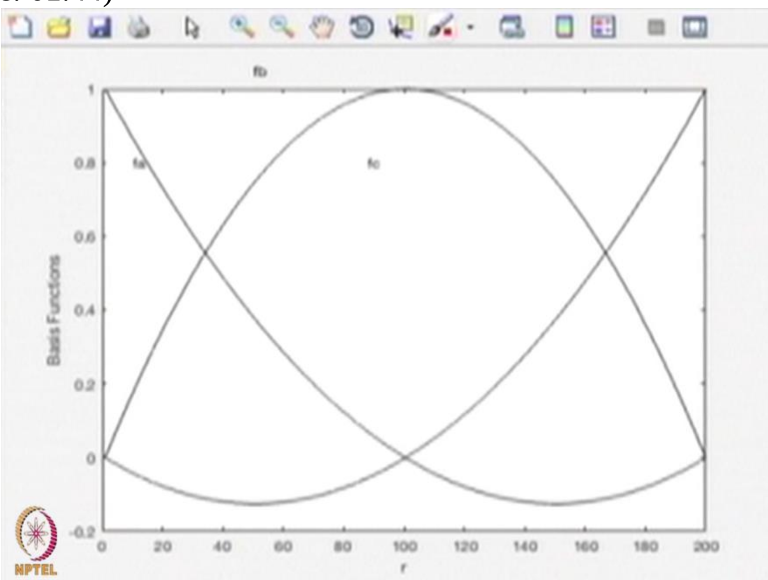

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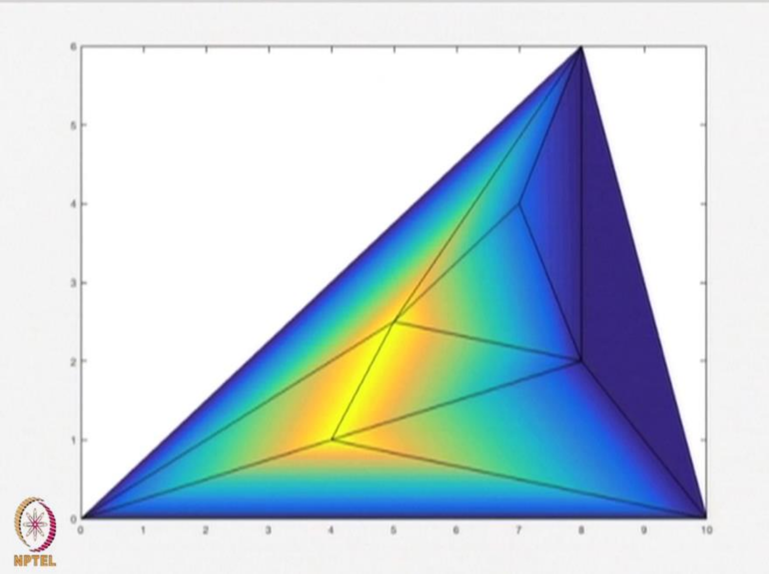

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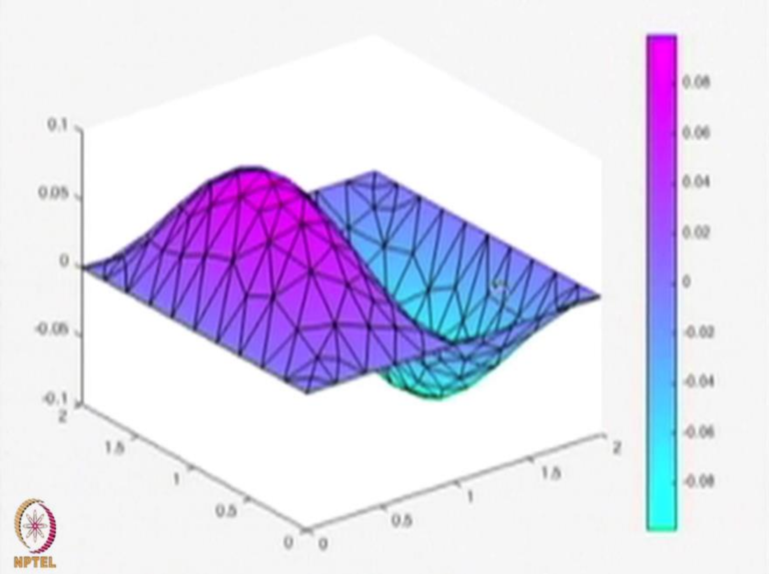

We will discuss a lot of examples using Finite element method in the next modules.

So please go through the derivations and examples that we have discussed in this module and get ready for the next week. Until then Good Bye!