

**Abstract:**

Finite element analysis has become established as a powerful method - or, more correctly, a family of methods - for the spatial approximation of systems of partial differential equations and variational problems. It finds application in a multitude of areas in the engineering and natural sciences, and beyond. The method has a sound mathematical foundation, and contemporary developments span the spectrum from problems concerned with the construction and analysis of stable, convergent methods, to those directed at specific applications. The aim of this talk is to provide an overview of the finite element method with the focus on formulations, their analysis, properties, and various applications.