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Special Issue on Finite Element Method

Call for Papers

The finite element method (FEM) or finite element analysis (FEA) is a numerical technique for finding approximate solutions to partial differential equations (PDE) and their systems, as well as integral equations. In simple terms, FEM is a method for dividing up a very complicated problem into small elements that can be solved in relation to each other. FEM is a special case of the more general Galerkin method with polynomial approximation functions. The solution approach is based on eliminating the spatial derivatives from the PDE. This approximates the PDE with a system of algebraic equations for steady state problems, a system of ordinary differential equations for transient problems.

These equation systems are linear if the underlying PDE is linear, and vice versa. Algebraic equation systems are solved using numerical linear algebra methods. Ordinary differential equations that arise in transient problems are then numerically integrated using standard techniques such as Euler's method or the Runge-Kutta method.

In solving partial differential equations, the primary challenge is to create an equation that approximates the equation to be studied, but is numerically stable, meaning that errors in the input and intermediate calculations do not accumulate and cause the resulting output to be meaningless. There are many ways of doing this, all with advantages and disadvantages. The finite element method is a good choice for solving partial differential equations over complicated domains, when the domain changes, when the desired precision varies over the entire domain, or when the solution lacks smoothness. For instance, in a frontal crash simulation it is possible to increase prediction accuracy in "important" areas like the front of the car and reduce it in its rear. Another example would be in Numerical weather prediction, where it is more important to have accurate predictions over developing highly nonlinear phenomena rather than relatively calm areas.

In this special issue, we intend to invite front-line researchers and authors to submit original research and review articles on exploring **Finite Element Method**.

Authors should read over the journal's Author's Guidelines carefully before submission, Prospective authors should submit an electronic copy of their complete manuscript through the journal Paper Submission System.

Please kindly notice that the"**Special Issue**" under your manuscript title is supposed to be specified and the research field "**Special Issue - Finite Element Method**" should be chosen during your submission.

According to the following timetable:

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