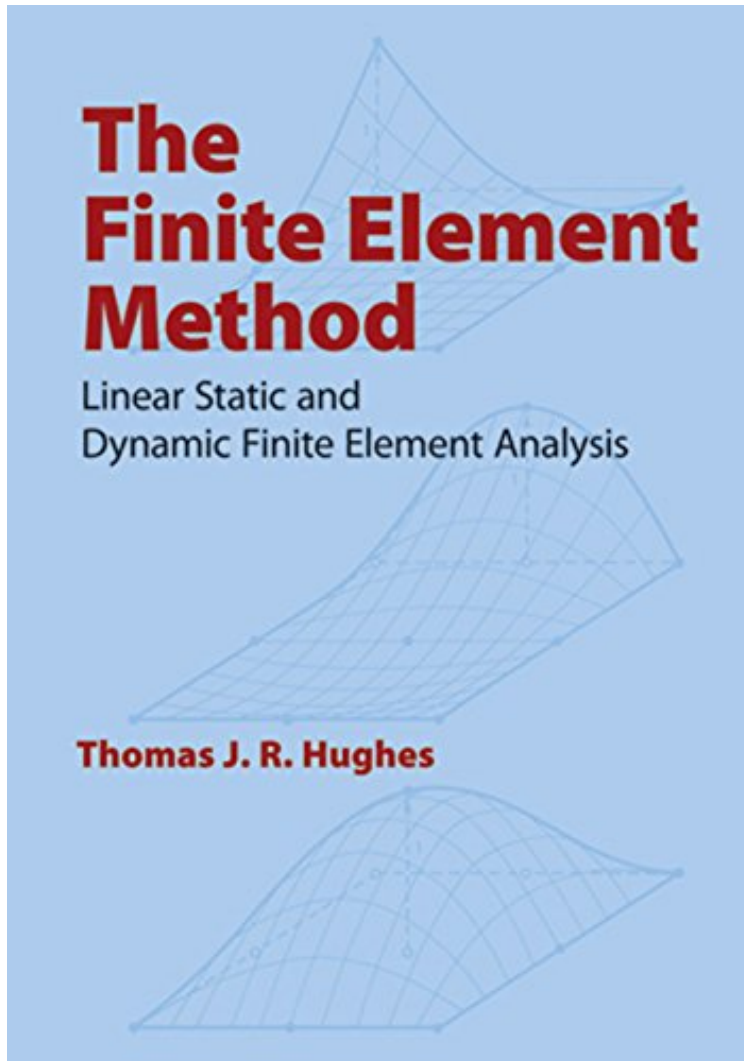


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The Finite Element Method: Linear Static and Dynamic Finite Element Analysis



Par Thomas J. R. Hughes
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Description :

Prsentation de l'diteurOriginally developed to address specific areas of structural mechanics and elasticity, the finite element method is applicable to problems throughout applied mathematics, continuum mechanics, engineering, and physics. This text elucidates the method's broader scope, bridging the gap between mathematical foundations and practical applications. Intended for students as well as professionals, it is an excellent companion for independent study, with numerous illustrative examples and problems. The authors trace the method's development and explain the technique in clearly understandable stages. Topics include solving problems involving partial differential equations, with a thorough finite element analysis of Poisson's equation; a step-by-step assembly of the master matrix; various numerical techniques for solving large

systems of equations; and applications to problems in elasticity and the bending of beams and plates.

Additional subjects include general interpolation functions, numerical integrations, and higher-order elements; applications to second- and fourth-order partial differential equations; and a variety of issues involving elastic vibrations, heat transfer, and fluid flow. The displacement model is fully developed, in addition to the hybrid model, of which Dr. Tong was an originator. The text concludes with numerous helpful appendixes.