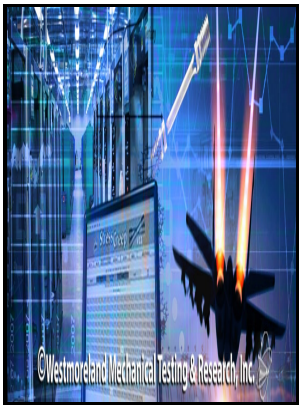
Numerical methods for creep and rupture analyses

Gordon and Breach - Numerical schemes based on the stress compensation method framework for creep rupture assessment



Description: -
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Entertainers -- United States -- Biography.
Poets, American -- 20th century -- Biography.
Carroll, Jim -- Childhood and youth.
Numerical analysis.
Fracture mechanics.
Materials -- Creep.Numerical methods for creep and rupture analyses
-Numerical methods for creep and rupture analyses
Notes: Bibliography: p. 199-204.
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Tags: #Stress #Analysis #for #Creep

Stress Analysis for Creep

Instead of using the detailed creep constitutive equations, the present methods just need to know several material parameters including the creep rupture data. The boundary element method and the finite element method are applied in plates in order to do the numerical analysis.

Numerical Simulation of Creep

As a result, the two numerical schemes are proved to be effective and reliable for solving practical industrial problems.

Numerical analysis of creep problems — Northwestern Scholars

The main challenging issue using these methods concerns their reliability of extrapolation from short term creep data. The creep phenomenon takes place in the domain which is discretized into quadratic quadrilateral continuous and discontinuous cells.

Creep in Structures

The resulting constitutive relations are able to emulate most essential features of ferroelectric and ferroelastic behavior with minimal computational cost and, furthermore, generate stable predictions in contrast to earlier phenomenological theories. Constitutive and evolution equations, response functions and material constants are presented according to recently published experimental data. There is also a possibility of sediment formation that changes the temperature gradient in tube walls, leading to different creep behaviors.

Reliable analysis and extrapolation of creep rupture data

The book first ponders on the occurrence of creep in mechanical engineering components, including background to stress analysis for creep and general-purpose computer programs for creep analysis. We discuss it first and point out its limitations due to excessive computer demands. By way of example, a specific set of constitutive functions is considered.

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