

David H. Allen, Texas A&M University, USA

“Modeling Fatigue Cracking and Buckling of Rails”

The presentation will be focused on efforts within the Texas A&M Center for Railway Research to focus on problems encountered within the rail industry in the United States. Specifically, fatigue cracking and rail buckling are the two most common causes of derailments in the U.S. Accordingly, drawing on his previous experiences with computational mechanics, the author will review his two-way coupled multiscale computational methodology for modeling the evolution of spatially and temporally evolving cracks in both elastic and inelastic solids. After a brief review of the theoretical foundations for the multiscale approach, example problems will be shown to demonstrate and validate the methodology. The approach will then be employed to model a variety of problems, including heterogeneous composites and impact physics. The talk will conclude with applications to both railway fatigue cracking and railway buckling.



David Allen is Adjunct Professor at Texas A&M University, US. He received a Ph.D. from Texas A&M University in 1980. His research interests related to Continuum Mechanics, Solid Mechanics, Fracture Mechanics, Viscoelasticity, with applications to infrastructures.