



RESEARCH COLLOQUIUM

Department of Applied Mechanics

IIT Madras

MODELING OF RESPONSE OF METALS AT HIGH STRAIN RATES USING UNIFIED MECHANICS THEORY

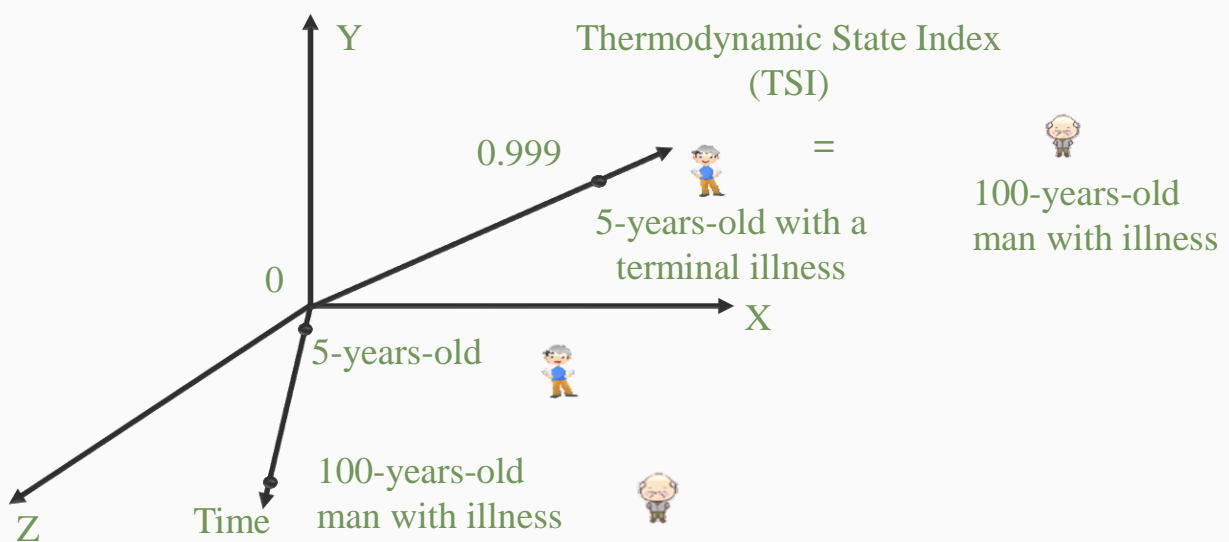
Speaker: Noushad Bin Jamal M

Date/Time : 06-10-2021 4:30PM (IST)

Venue : Zoom Meeting: [Click here](#)

Abstract

Several engineering applications involve high strain rate deformation. Physics-based constitutive modelling of response under such events has been the pursuit of many researchers. I would like to introduce a physics-based approach using Unified Mechanics Theory (UMT) for modelling the response of metals at various strain rates and temperatures. Unified Mechanics Theory is the unification of the second law of Newton and the second law of thermodynamics at the ab-initio level. In this seminar, I would like to present some important features of UMT based modelling, and share some results on modelling of the response of 'metals at low strain rates using continuum mechanics principles, 'metals at high strain rates, using micromechanics of defects' and 'the dynamics of dissipative single degree of freedom systems'.



Coordinate system in Unified Mechanics Theory

Zoom meeting link

<https://buffalo.zoom.us/j/4178799277?pwd=OXhQbmtNd05CV2Mxb1JqemFMQ3hnQT09>