



THURSDAY, OCTOBER 28 2:00-2:50PM CM266

ME Research Seminar

At the continuum limit: Capturing the internal dynamics of flow discontinuities

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Speaker Bio:

Dr. Thalakkottor is an Assistant Professor in the Department of Mechanical Engineering at South Dakota Mines. He received his bachelor's in engineering from Cochin University of Science and Technology, India. After which he worked as a senior design engineer at the shipbuilding division of Larsen and Toubro Ltd., India. Following which he went on to pursue his masters and doctoral degree at the University of Florida. Here he continued as a postdoctoral associate before joining South Dakota Mines in August 2021. His research is focused on gaining a deeper understanding of the nature, behavior, and effects of features existing at the limits of continuum field theory.

Talk Abstract:

One of the most common assumptions made in the field of mechanics is that materials are a continuous mass rather than discrete particles. Because of which various flow features such as a material interface, shock front, and combustion front, are represented as discontinuities. On the other hand, in nature mathematical discontinuities do not exist. These discontinuities are continuum approximations of a diffused region with fluid properties and flow parameters varying sharply, but continuously, across it. Here, a roadmap is presented that shows that equations describing a discontinuous feature can be derived from those describing the diffused region based on Gibbs' concept of dividing surface. Hence, ensuring that the discontinuous feature is both kinematically and dynamically equivalent to that of the diffused region.

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LIVE on Zoom: j.mp/F21researchseminar

followed by social at 3pm in CM 215

(The ME Zoo) with light refreshments

Info & past videos: me.sdsmt.edu > seminars