



Recent developments in Structural Health monitoring: acoustic source localization, linear/nonlinear ultrasonic techniques and wave propagation modelling

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Abstract: This presentation will go over our research and developments over last few decades on acoustic source localization, linear and nonlinear ultrasonic techniques for inspecting materials and structures at different scales - from microscopic biological cells to large scale metal, composite and concrete structures. Along with the experimental results our newly developed mesh-free modelling technique called distributed point source method (DPSM) for solving elastic and electromagnetic wave propagation problems will be discussed. Advantages of our proposed nonlinear ultrasonic technique called Sideband Peak Count – Index (SPC-I) technique, DPSM modeling and acoustic source localization technique for structural health monitoring purpose will be highlighted in this presentation.

Brief Bio: Professor Kundu's major research area is nondestructive testing and structural health monitoring. On this topic he has published 9 books and 370 technical papers - 190 of those in peer reviewed scientific journals with over 8000 citations according to Google Scholar with an h-index of 48 (Google Scholar), 40 (Scopus) and 34 (Web of Science). He received *Humboldt Research Prize (Senior Scientist Award)* in 2003 and *Humboldt Fellowship* award in 1989 and 1996, from Germany. He was also recognized through 2012 *NDE Life Time Achievement Award* from SPIE (the International Society for Optics and Photonics), 2015 *Research Award for Sustained Excellence* from ASNT (the American Society for Nondestructive Testing), 2017 Founders Award from Nondestructive evaluation, Diagnostics and Prognostics Division (NDPD) of ASME (the American Society of Mechanical Engineers), 2015 *Lifetime Achievement Award* and 2008 *Person of the Year Award* from the Structural Health Monitoring Journal, *Satish Dhawan Chair Professorship* from the Indian Institute of Science, Bangalore and a number of *Invited & Honorary Professorships* from France, Germany, Sweden, Switzerland, Spain, Italy, South Korea, Poland, Singapore, India, China and Japan. He is *Fellow* of six professional societies (ASME, ASCE, SPIE, ASNT, ASA & IIAV) and the Founding Editor-in-Chief of the ASME **J**ournal of Nondestructive Evaluation, **D**iagnostics and Prognostics of **E**ngineering Systems (JNDE). He has served as the Associate Editor of four other journals.