Biographical sketch of Graeme Milton

Graeme Milton received his Ph.D degree in Physics from Cornell University in 1985, and a D.Sc from Sydney University in 2003 based on his book "The Theory of Composites" published by Cambridge University Press, followed by the 2016 book "Extending the Theory of Composites to other Areas of Science". He is currently a distinguished professor of mathematics at the University of Utah, where he served as department chairman from 2002 to 2005. He has been awarded Sloan and Packard Fellowships, the 2003 SIAM Ralph Kleinman Prize for research bridging the gap between mathematics and applications, the 2007 Society for Engineering Science Prager Medal for contributions to theoretical mechanics, the 2012 Landauer Medal of the ETOPIIM association for seminal contributions to the field of composite material science, and the 2015 International prize Tullio Levi-Civita for the Mathematical and Mechanical Sciences. He is a fellow of Society for Industrial and Applied Mathematics.

His main interests are in the fields of composite materials, inverse problems, cloaking theory, discrete networks, electromagnetism and elasticity theory, with about 190 published papers. According to Google Scholar he has over 17,000 citations and an h-index of 60. He, with his collaborators, are best known for: the "Bergman-Milton" bounds on the complex moduli of composites; the Milton zeta and eta parameters that partly govern the electrical and elastic response of microstructures; the CLM (Cherkaev, Lurie and Milton) theorem giving exact results for the effective elastic moduli of 2d-composites; the general theory of exact relations for composites; pentamode materials that are a sort of anisotropic gel that can guide stress; metamaterials that can reverse the sign of the Hall coefficient; the discoveries of anomalous resonance, ghost sources, cloaking due to anomalous resonance, and active exterior cloaking; and the discovery of a new type of wave, called a field pattern, in microstructures where the moduli vary in both time and space. Recently, him and his collaborators have designed novel structures for earthquake isolators, and formulated an approach for designing arches and similar masonry structures that are stable and which avoid a given set of obstacles.