Univ. Prof. Dr. rer. nat. Wolfgang H. MÜLLER **03.11.2016**

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Ankündigung eines Gastvortrages

zu dem Thema

Generalised Continua and the design of meta materials: numerics, experiments and theory

Ort:

Technische Universität Berlin, Gebäude MS,
Raum MS 209
Mittwoch, 09.11.2016, 14:00 Uhr c.t.

Gastdozent:
Francesco dell'Isola
Università di Roma "La Sapienza", Italien

Abstract:

Mathematics is regaining its role in applied mechanics.
The contingent circumstance concerns one of the last challenges in engineering sciences: We mean the effort to design metamaterials (or architectured materials).

Synthesis of metamaterials consists in finding the way to construct fabrics whose global behavior is tailored for a specific application or requirement.
How do we specify such requirements or behaviors? By means of the governing equations which we wish to be valid to describe the desired material.
Therefore the old problem of synthesis of electronic circuits for obtaining analog computers finds a renewed life in a slightly different context. It reformulates as follows: Given the governing equations one has to find the microstructure which macroscopically is described by them.
The parallel development of 3D printing technologies made this endeavor realizable also in practice.
Some theoretical, experimental and numerical results will be presented: they show how the "ancient" theory of generalized continua finds new beautiful and promising applications. In particular the exotic behavior of pantographic structures is described and analyzed.