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MATHEMATICS AND MECHANICS OF COMPLEX SYSTEMS

ABSTRACT

Metamaterials are Materials which are designed and built for some specific purposes.

If one wants some metamaterials capable to undergo large deformations without losing their elastic behaviour then the suitable concept to be exploited is that of pantographic micro structure. Indeed the theoretical efforts spent to find find such extremely extensible materials, required by a specific technological demand, are described together with gathered numerical and experimental evidence.

While the modeling tools were already available since the work of Gabrio Piola (1822,1848,1856) only with modern 3D printing technology and computation tools it was possible to prove that a searched materials do really exist.