EDITORIAL

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Generalized continua with applications: Euromech Solid Mechanics Conference 2018

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Abstract Motivating by two minisymposia on generalized models of continua organized within the Euromech Solid Mechanics Conference, Bologna, Italy 2018, we introduce the corresponding special issue based on these events.

Keywords Generalized continua · Cohesion-adhesion Interactions · Thin structures · Euromech Solid Mechanics Conference

1 Introduction

Recently, the interest to generalized models of continua and structures grows with respect to possibility of the proper description of materials and structures with complex inner structure such as metamaterials. It is worth to note the generalized models can also extend the further application of continuum and structural mechanics to material modelling at the nanoscale or to take into account complex physical coupling with other fields.

As a result of the mentioned, one can see the significant increase in publications in the field and conference lectures. It is worth to mention the celebration of 100th years of the book by Cosserat brothers; see [17]. Last decade, a lot of publications appears in the field; see, e.g., collections [1–7, 11, 17], monographs [8, 14–16], and reports on several events [12, 18, 19]. Note that nowadays the generalized models of continua are even included as a part in textbooks on continuum mechanics; see, e.g., [9, 10, 13].

As a proof of the interest to generalized media, one can consider recent *10th European Solid Mechanics Conference* which took place from July 2 to 6, 2018, in the Bologna, Italy. The conference was organized by the Universities of Bologna and Trento, under the auspices of EuroMech, with Professors Davide Bigoni (University of Trento) and Francesco Ubertini (University of Bologna) as chairmen. Within the conference, there were two minisymposia called “*Mechanics of Generalized Continua with—Mechanics of Cohesion-adhesion*”

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Interactions and their Applications to Size-dependent Thin Structures” organized by Holm Altenbach (Otto-von-Guericke Universität Magdeburg, Germany), Sergey Lurie (Russian Academy of Sciences, Moscow) and Nikita Morozov (Saint Petersburg State University and Russian Academy of Sciences, Russia), and *Mechanics of Generalized Continua with Applications to Microstructured Materials*” organized by Victor Eremeyev (Gdańsk University of Technology, Poland), Patrizio Neff (Universität Duisburg-Essen, Germany) and Panos Gourgiotis (Durham University, UK).

During these minisymposia, the main attention was paid to the following topics:

- micropolar and micromorphic continua;
- strain gradient media;
- surface elasticity;
- coupled models and phase transitions;
- discrete models of continua;
- peridynamics;

together with various applications to mechanics of composites, thin structures and metamaterials, theory of adhesion and wave dynamics.

The special issue “Generalized media with applications” collects selected papers presented during these minisymposia and papers of known specialists in the field.

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