UNIVERSITÀ DEGLI STUDI DI TRENTO
Dipartimento di Ingegneria Civile, Ambientale e Meccanica

Instabilities and nonlocal multiscale modelling of materials
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AVVISO DI SEMINARIO

Si comunica che **venerdì 16 marzo 2018 a partire dalle ore 10.30**
si terrà presso l'aula **C2** (via Mesiano 77) il seguente seminario

Forensic contributions to the study of the mathematical models of mechanical deformations of human tissues

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The theory and practice behind the medico-legal field unify in a large array of knowledge and special diagnostic tools regarding head and brain trauma, this particular pathology being confronted frequently.
Analysing these lesions from a different angle, specifically from a biomathematical standpoint, has peaked our interest. Therefore, our study approaches the main issues of mechanical traumatology, by blending together fundamental principles of both medico-legal and biomathematical fields, achieving relevant results which can set the base for future research. In our study, the cerebral tissue samples were harvested during the medico-legal autopsy following a strict protocol drafted by the interdisciplinary team (forensic doctor and mathematician). This experimental study attempts to reproduce the initial mathematical model designed for axial brain tissue compression, delivering us information about the structural behavior of said tissue under mechanical stress. The data was collected using a customised machine (oedometer) designed to register displacement and a special software. We noticed that the samples became more and more prone to deformation as the cerebral spinal fluid was drained from it (as a consequence of continuous compression). Our results showed that by using biomathematics we can predict the structural behavior of biological tissue (in our case, cerebral tissue) subjected to axial compression which ultimately generates an altering of its biohumoral, biophysiological and physical constants. This knowledge can be used to better understand the structural differences between a healthy brain and a patological one, not just from a biological point of view, but also from a more objective standpoint by using clear parameters such as displacement. Future endeavors consist in, firstly, corectly interpreting the results in a multidisciplinary manner, to better understand how traumatic agents act and secondly, to apply similar mathematical models to other types of biological tissue.

Tutti gli interessati sono invitati a partecipare.

Il seminario è organizzato dal gruppo di Scienza delle Costruzioni
(D. Bigoni, L. Deseri, N.Pugno, M. Gei, A. Piccolroaz, F. Dal Corso, M.F. Pantano, R. Springhetti)

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