



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 **lunedì 09 aprile 2018 a partire dalle ore 10.30**  
si terrà presso l'aula **B2** (via Mesiano 77) il seguente seminario

### Liquid forces on elastic structures: capillarity prevails at small scales

**Prof. Sébastien Neukirch**

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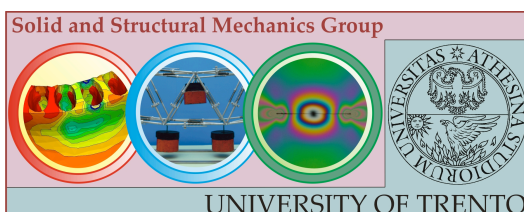
At small scales, liquid droplets develop capillary forces strong enough to deform thin elastic structures. For example, upon compression of its ends, a spider capture silk thread spontaneously bends and spools inside the water droplets sitting on it. This elasto-capillary coiling provides the hybrid fiber (thread+droplet) with a liquid-solid mechanical response. Indeed, capillary forces compressing the thread inside the droplet confer a constant tension to the system, even in a globally compressed configuration. This behavior is characteristic of liquid soapy films.

This one-dimensional liquid-solid fiber is now extended to a two-dimensional version: the liquid infused nano-fibrous membrane. Here, wrinkling of the membrane inside the liquid film provides a novel tightening self-storing mechanism; the hybrid membrane adapts its surface area even when compressed, always remaining under tension. The cohabitation of liquid interfaces and the folding of intrinsically inextensible fibers gives rise to interesting behaviors and allows us to re-visit classic objects such as liquid (and solid!) bubbles and catenoids.

Tutti gli interessati sono invitati a partecipare.

Il seminario è organizzato dal gruppo di Scienza delle Costruzioni

(D. Bigoni, L. Deseri, N. Pugno, A. Piccolroaz, F. Dal Corso, M.F. Pantano, R. Springhetti, D. Misseroni)



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