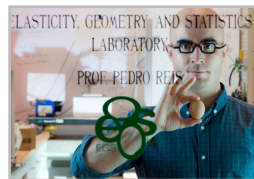




announcements

Mechanical Engineering Lecture in  
Mechanics

## 'Eggstreme' Mechanics of Shells: From buckliphobia to buckliphilia in soft structures



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**Friday December 9, 4:00PM, 3-270**

Buckling of slender structures is typically regarded as a first step towards failure that is to be avoided ('Buckliphobia'). Instead, we envision mechanical instabilities in soft structures as opportunities for scalable, reversible, and robust mechanisms that are first to be predictively understood, and then harvested for function ('Buckliphilia'). A series of examples with a focus on thin elastic shells will be provided. I will first revisit the canonical Mechanics problem of sensitivity of shell-buckling to geometric imperfections. I shall then move on to the post-buckling regime of shells where periodic dimpled patterns are observed; for the cases when i) the shell is constrained from within by a rigid mandrel or ii) bound to an equally curved soft substrate (curved wrinkling). This periodic dimpled patterns will be used as a model system to study fundamental properties of curved surface crystals. Finally, taking inspiration from the resemblance of our dimpled wrinkling patterns and golf balls, I will introduce a new class of smart morphable surfaces for switchable and tunable aerodynamic drag.