Der Lehrstuhl für Technische Mechanik lädt ein zur Vorlesungsreihe

Nonlinear Elasticity Theory of Cosserat Plates

Lecturer: Prof. Dr. Ajeet Kumar, Dept. of Applied Mechanics, IIT Delhi
Venue: Besprechungsraum ZISC 0.02-142, Martensstr. 5a, 91058 Erlangen

Dates

Tuesday,	**09.07.2019**	**16:30 – 18:00**
Thursday,	**11.07.2019**	**15:00 – 18:00**
Tuesday,	**16.07.2019**	**15:00 – 18:00**
Thursday,	**18.07.2019**	**15:00 – 18:00**
Tuesday,	**23.07.2019**	**16:00 – 17:00**

Plate theory is used to model continua which have one of its dimensions significantly smaller than the other two. Several plate theories exist such as Kirchhoff-Love theory, Mindlin-Reissner theory etc. They all involve approximations limiting the allowable deformation in plates, but they lead to simpler linear and/or higher order equations which are easier to solve. In this short course, we will discuss a general nonlinear theory of plates where the plate is able to undergo arbitrarily large deformations. We will also show how the theory reduces to classical plate theories in the small deformation limit. Finally, we will present a finite element formulation to solve the nonlinear equations of Cosserat plates. This will be useful in modelling wings to understand locomotion of birds, curling of plant leaves, foldable structures, the mechanics of Kirigami based metamaterials and many more.

Illustration of a highly deformed wing

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