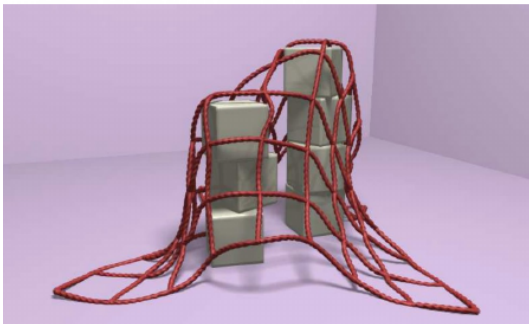


Nonlinear flexible beam structures

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Many objects correspond to very flexible slender beams that make large nonnegligible motions in 3D, such as cables or slender and light aircraft wings. Our research is focused on models for such beams, as well as "networks" of these beams: beams attached to one another to form flexible structures. These models are geometrically nonlinear in order to account for the large motions. Developing mathematical analysis and model reduction tools for these models is needed in order to tackle control and stabilization problems that permit to predict and enforce the future behavior of the beams and beam networks.

Sources:

<http://cafe.foundation/blog/elektra-solar-launches-hale-with-autonomous-control/>

M. K. Jawed et al., Phys. Rev. Lett. (2015)

Spillmann J. et al., IEEE Trans. Vis. Comput. Graph. (2009)