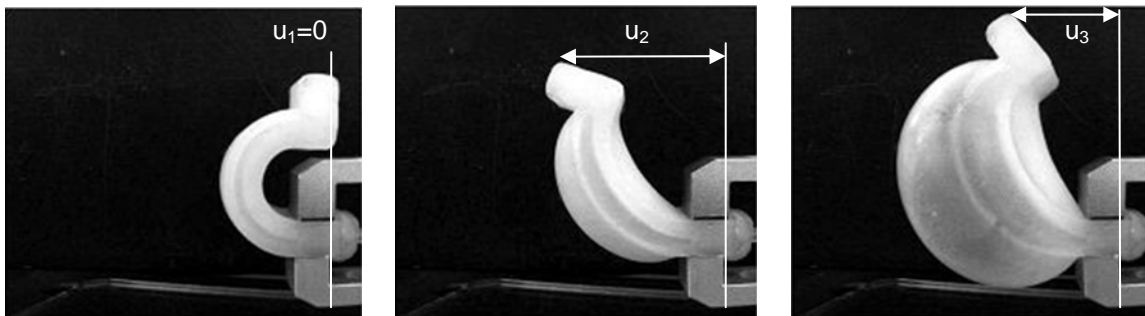


Compliant Structure with Reversal Effect

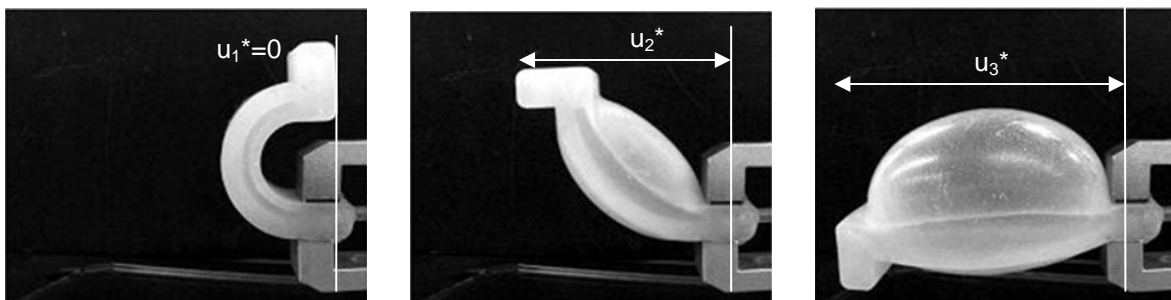
System: Pneumatic actuated structure consisting of highly elastic material with reversal effect

Functional principle: Behaviour with reversal effect of a compliant structure is realized under increasing pressure in the interior by a specific geometric shape of the hollow structure and special thickness of the wall. The reversal behaviour and the return point are defined by the relation between the wall thicknesses of the internal and external curvature of the wall.



Characteristics and advantages:

- motion with reversal effect
- return point is defined by mechanical properties
- position u_0 is possible by two different pressures and therefore with different rigidities
- highly elastic material
- monolithic compliant unit, produced in one single step
- cascading is possible



Application:

- single and cascaded fingers for external and internal gripping, particularly with a behaviour, which has an unchanged parameter u for pressure rise (broken line); less sensory effort for a gripping an object
- lever for the force transmission
- legs for a walking robots
- monolithic robot arms

