

Bubble Geometry

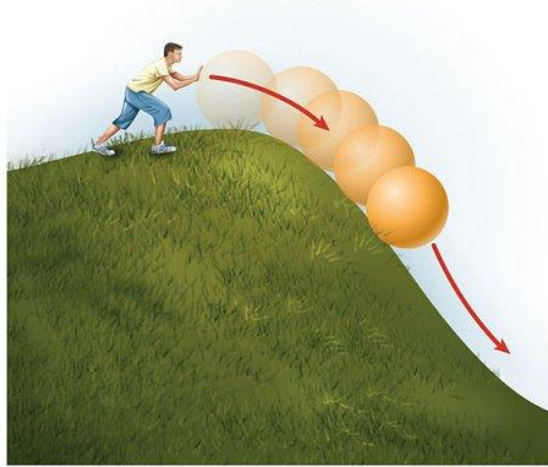
Review: What is Potential Energy?

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- Potential energy is an object's capacity to do work due to its position, shape, or arrangement.
- Examples
 - Gravitational
 - Chemical
 - Mechanical



a) Potential energy



(b) Kinetic energy



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- Potential energy is the capacity to do work
- Examples
 - Gravitational
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Thermodynamics

- Thermodynamics is the branch of physics that studies energy and its transformations
- **Second law of thermodynamics**
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 - **Simplification: In most cases...**
 - **Things tend to change so that they have le potential energy.**

Second Law of Thermodynamics

Examples:

- Balls roll down a hill
- Food gets digested to release energy
- Stretching a spring or rubber band



What are some things that can store elastic potential energy?

- Springs
- Rubber bands
- Poppers
- ***Soap films***
 - Water tension
 - Hydrogen bonding
 - Hydrophobic effect



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What happens when you form a bubble?

- Soap film must stretch to include the air trapped inside it, or reach the surfaces that form its boundaries.
- But the more the soap film stretches, the more elastic potential energy it gains.
- Soap film will stretch as little as possible to keep its potential energy low
- ***The soap film will try to keep its surface area small.***

