UNRAVELING OF A KNOTTY MYSTERY

Ekaterina Vlasiuk, 785

- Diving into the problem

- Mathematical model of knots

- Experiment with color-changing fibers
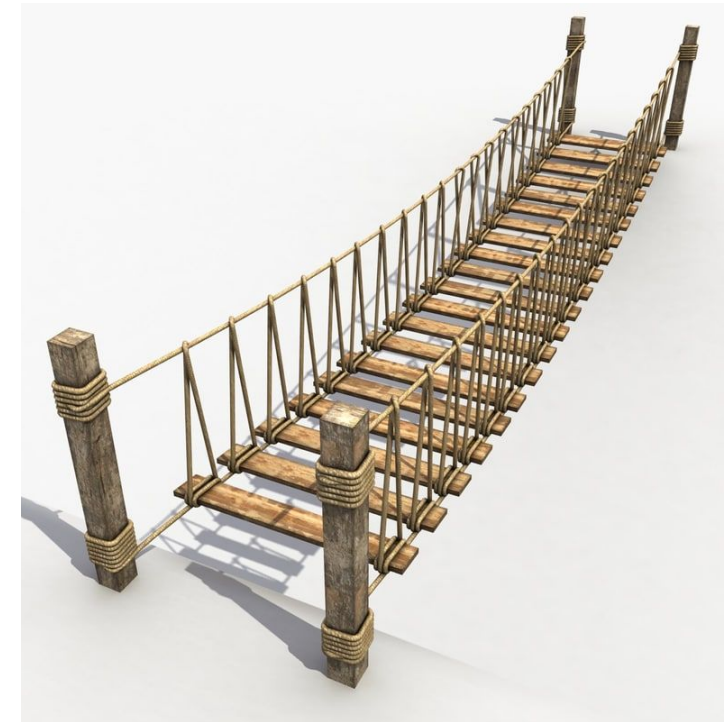
- Results and the application
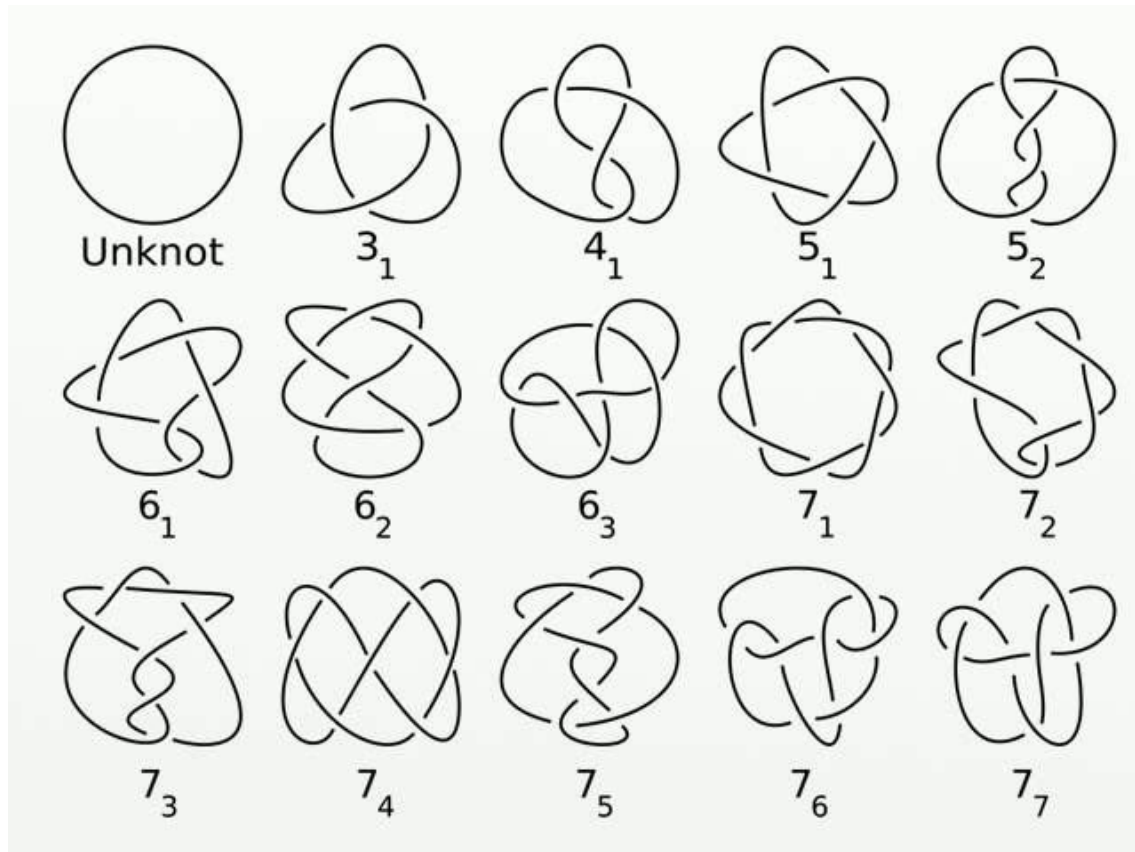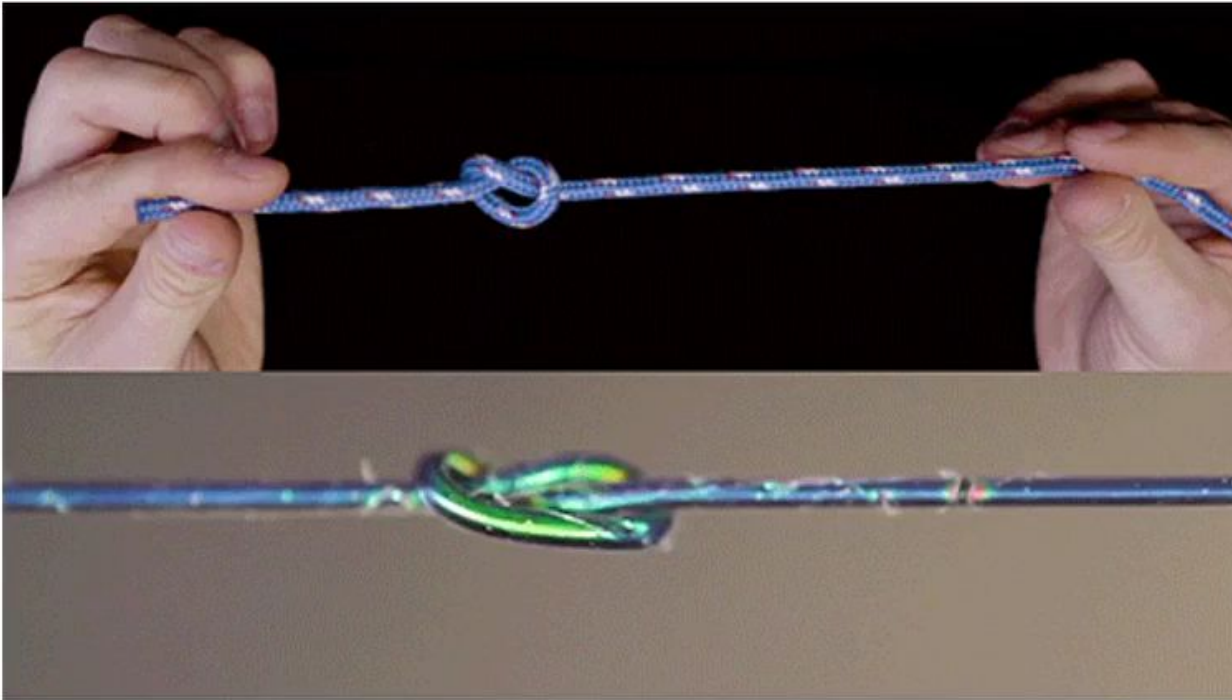
DIVING INTO THE PROBLEM

MATHEMATICAL MODEL

A table of prime knots up to seven crossings

COLOR-CHANGING FIBERS

Trefoil knot, partially tightened

http://news.mit.edu/2020/model-how-strong-knot-0102

https://www.scientificamerican.com/article/color-changing-fibers-unravel-a-knotty-mystery/

Zeppelin knot

Alpine butterfly knot

Conditions of knots' stability:

- a higher number of crossing points of two strands in contact

- rotation of strand segments at neighboring crossing points in different directions

- sliding of strands tangentially against each other

http://www.climbing.ru/media/all_2_2_1360/section_23_1_2_21/item_5433/

SUMMARY

- Comprehension of the problem
- Knot theory

- Experiment with color-changing fibers

- Results and the application

Thank you for your attention!