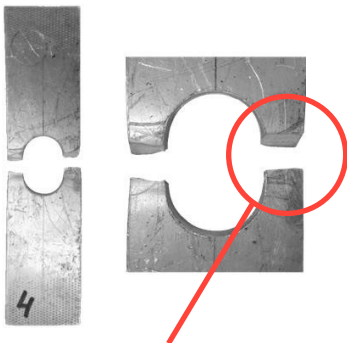


BAUMAN MOSCOW STATE TECHNICAL UNIVERSITY RESEARCH EXPERIMENT

**Parts with the holes: uniform stress distribution,
reinforcement without weight increase**

Goal: develop a method for determination of efficient reinforcing path in shell structural elements with holes and cutouts

ABM-4
(aluminium alloy)



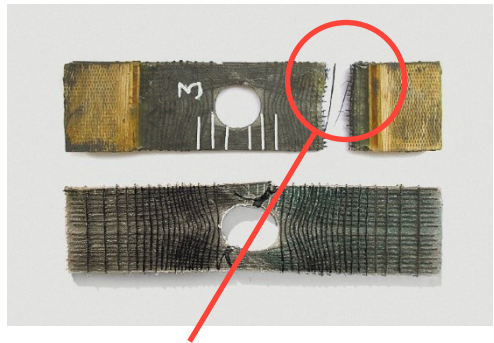
Failure: always about the hole

**Traditional method to increase strength: increasing thickness
→ weight ↑**

↘ The fiber steering plate is an experimental demonstrator of the method of efficient reinforcement of parts with the holes.

Holes are stress concentrators, significantly reducing the strength of structural elements. Traditionally, to increase the strength of an element, a part thickness is enhanced that leads to increasing of the part weight.

PETG + CCF
(Composite Carbon Fiber)



Failure: in the regular zone — part is equally strengthened

Anisoprinting: curvilinear reinforcing trajectories → effective response to the distribution of loads in the material → weight savings

Sample can be reinforced by curvilinear trajectories that suit to the loads distribution. Such reinforcement doesn't require weight increase. It's possible with special approach to fiber laying of Anisoprint.

Through the technology it's possible to apply composites where they never be before and discover new material properties, solving longtime problems.