



## **Different setups for dynamic tests with concrete slabs**

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Switzerland is one of the mountainous countries, where galleries are important structures regarding risk reduction of the public infrastructure against rockfall. Together with avalanche galleries and tunnel entrances that could also be stricken by a falling rock more than 350 respective structures exist. The majority consists of a reinforced concrete slab that is protected by a cushion layer.

In recent years a lot of knowledge was gained about the stress distribution between the cushion layer and the structure resulting from the impact of a falling rock from a geotechnical point of view. To enable both, an adequate design method for new galleries and a sound evaluation for existing ones, the influence of the dynamic structural behavior and of the dynamic material properties on the load capacity are studied. To calibrate finite element models, laboratory tests will be carried out.

In preliminary tests three different setups were experienced to judge their suitability for testing rockfall impacts on slabs under laboratory conditions. In the first test the slab is protected by a cushion layer and is hit by a falling weight. The action on the slab due to the impact was then tried to be reproduced by a servo-controlled actuator in the second test and by the reaction force of a blasted water column in the third one.

This contribution discusses the test setups and in particular it describes the measurement equipment and the obtained data.