

PROPAGATION AND ATTENUATION OF BLAST WAVES IN A LONG MODEL-BLAST-SIMULATOR

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To study the behavior of blast waves in long blast simulators, in the Ernst-Mach-Institut a model blast-simulator with a cross section area of 432 cm² and a length of 20 m has been constructed. It is a model of the large blast simulator Reiteralpe (75 m²/110m), but now with a length corresponding to 800 m Reiteralpe. The simulator is driven by 7 short generators, filled with compressed air up to 200 bar, which generate blast over-pressures up to 1.3 bar just downstream of the generators. For loading pressures of 50, 100, 150 and 200 bar, pressure-time histories, measured along the blast simulator, for an open, 47% open (RWE) and a closed simulator exit, give some information about attenuation, decay and reflection of blast waves.

Surprisingly two attenuation phases can be observed along the simulator. During the first phase, a high attenuation of the blastfront occurs, while during the second phase, farther downstream of the simulator, a weaker attenuation is present. Probably there are influences of the generators, because the blowing time of those is in order of the positive flow duration of the blastwave. However if the blast wave is produced by 1.47 g explosives - in this case the gas production time is very short - no different attenuation phases can be observed.

The experimental results, both for the open and the 47% open exit, are compared with numerical calculations, using the Q1DEUL-Code. There is a good agreement between experiment and calculation.