

**Title:** Acceleration fields induced by hypervelocity impacts on spacecraft structures

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**Abstract**

This paper presents an overview of the hypervelocity impact test campaign ongoing in the frame of the ESA contract “spacecraft disturbances from hypervelocity impact”. The project aims at analyzing the propagation of shocks due to hypervelocity impacts from the external shell of a spacecraft to its internal components. The object of the study is the GOCE satellite, which has been recognized to be very sensitive to small disturbances because of its payload that has been designed to measure even very low acceleration levels. In the first step presented hereafter, the test campaign has been focused on the qualification of the background environment inside the impact chamber and on the determination of the vibration levels induced by perforating and non-perforating hypervelocity projectiles on simple aluminum plates. The results currently obtained and a preliminary data analysis will be presented in the following.

**Keywords:** Shock; Hypervelocity impact; GOCE; Vibration