



SP B.1: Characterize surface erosion induced by hypervelocity W dust impacts: dust-gun experiments and analyses.

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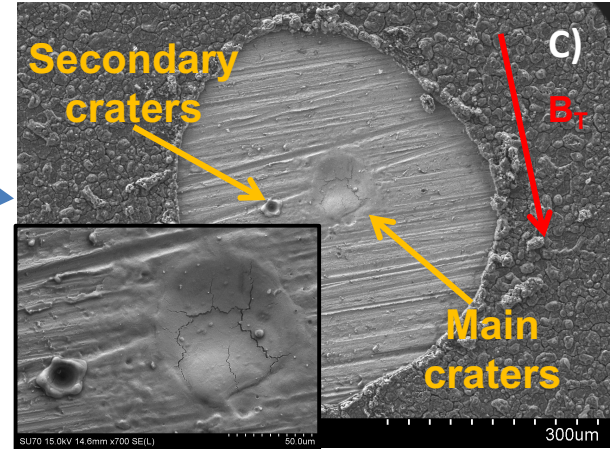


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Background and scope



- ❖ **Background:** analyses carried out on tiles of FTU limiter have shown the presence of surface erosion due to hypervelocity impact of Mo grains on the Mo tiles surface.



FTU tile damaged by hypervelocity impact of Mo dust ejected by explosion-like event due to energetic runaway electrons striking on PFCs.

Objectives of the task:

- ❖ Experimental investigation of the surface erosion, caused by hypervelocity W dust impacts, with the aid of a dust gun shooting system.
- ❖ Formulation of a damage scaling laws and extrapolations to ITER.

Parameter:	Circular	Elongated
Halos radius	250-400µm	300-700µm
Main craters radius	50-100µm	50-100µm
Craters depth	3-12µm	5-10µm

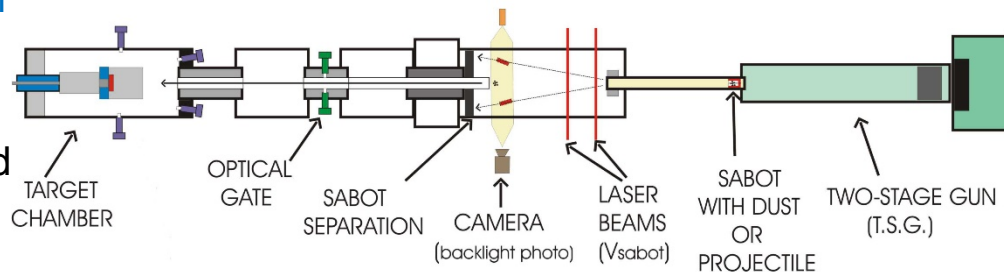
Summary table of craters dimension and shape found on FTU tiles.

Status of the task and experimental approach

Reproduce hypervelocity dust impact by means of dust gun shooting system:

- The shooting system has been reactivated and tested.
- Perfectly spherical W dust has been ordered to Tekna company; W targets are already in house.
- Comparison to analogues old tests with Mo dust on Mo targets will be carried out (*by summer break*).
- Additional tests and extrapolation of a damage law and estimation of expected material erosion amount of target (*after summer*).

IMPACT of HIGH-SPEED DUST - FACILITY SETUP



Dust gun shooting system in CNR Milano.

