First LHC Collimator Project Meeting

I. **Fast Proton Loss (smaller than ms). Protons accidentally kicked out of aperture onto the front face of a dump (collimator)**

-Base Line, proton-density in hor. and vert. direction on front face: dp/dx dy, energy 450 and 7000 GeV/c.
-FLUKA + low Z-low density material (Li, Ice, Be, C, Diamond, Ceramics, Al, Ti or any combination of them): dE/dm (Joule/gr) → high specific heat → low adiabatic temperature rise → low thermal expansion, low Young's modulus (high elasticity) → low thermal stresss → yielding, melting, vaporizing,...
-Additional Conditions: el. conductivity, shape, vacuum, bakable,...

II. **Slow (several m s) and continuous Proton Loss. Protons slowly drifting towards the front or side face of a collimator**

-Base Line dp/dx dy, Energy.
-FLUKA + Material: dE/dm.
-Proton Flux in time dp/dt: dW(x,y,z,t)/dm (Watt/gr).
-RF-Losses, depending on p-intensity, energy, beam distance, el. conductivity and shape of collimator. Additional heat source dW/dV (Watt/cm**3) or dW/df (Watt/cm**2).
-Heat Transport Equation → (specific heat) →thermal conductivity!!
-T(x,y,z,t)
-Al, Cu, cooling, compatible with the machine.

III. **Aim: Try to combine the technical solutions for case I and II???**
Do we overemphasize case I?
Try to foresee fast, remote "replacement" of collimators when hit (and broken?) by case I.