Cooled Ablation

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The "Toy model"

One pulse instantaneous temperature rise: $\Delta T \propto \frac{1}{\sqrt{1+t/\tau_0}}$

Temperature of the surface encountered by the (n+1)th pulse:
$T_n + 1 = T_n + \delta T$ with $\delta T = \frac{\Delta T}{\sqrt{1+\tau_R/\tau_0}}$

Ablation after m pulses : Proof

$$T_c < T_{material} = T_0 + \Delta T + \frac{\Delta T}{\sqrt{1 + \frac{\tau_R}{\tau_0}}} + \frac{\Delta T}{\sqrt{1 + \frac{\tau_R}{\tau_0}}} + \dots$$

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$$\Leftrightarrow \boxed{m = \frac{T_c - T_0 - \Delta T + \delta T}{\delta T}} \quad (1)$$

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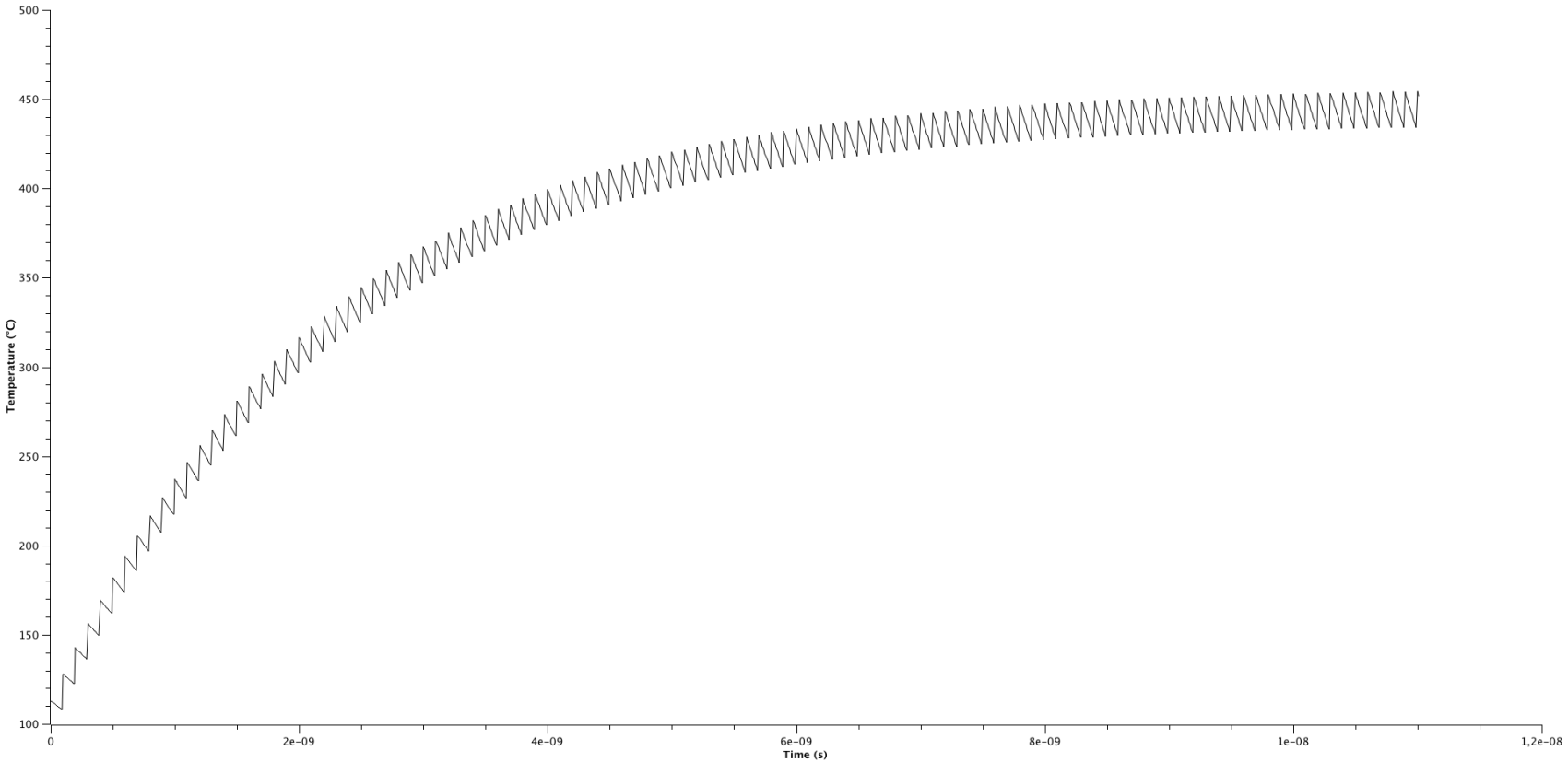
- MatLab is, sometimes, a "black box",
- It is not a free software.



Temperature evolution of the impact point

Thank you for your attention