

Cooled Ablation

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1 Introduction

- What is laser ablation ?
- Principles of cooled laser ablation

2 MatLab simulation

- Choices of programming
- Results

3 Application of this ablation : medical ablation

4 Conclusion

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:

$$T_n + 1 = T_n + \delta T \text{ with } \delta T = \frac{\Delta T}{\sqrt{1+\tau_R/\tau_0}}$$

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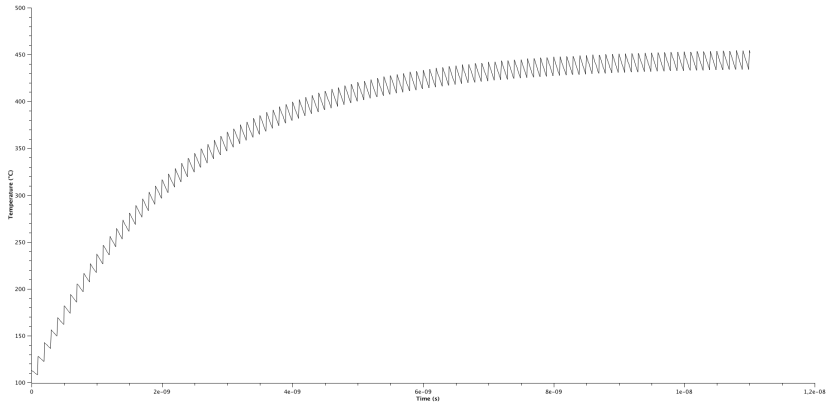
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- MatLab is, sometimes, a "black box",
- It is not a free software.



Temperature evolution of the impact point

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Thank you for your attention