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Liquid Metal Target Inside Solenoid

- Injection of liquid metal target into Solenoid hampered by
  forces, friction, pressure:

$\sim \frac{dB}{ds}$, $B_{(s)}$, $v_{(s)}$, target diameter, electrical conductivity of liquid.

- Let drop « Target-lets » from above into the center of the Solenoid

- Supply « shower head » with pipes of large cross-section to keep v low

In supply pipe: $v_{shower} \approx \frac{v_{axial\ injection}}{\text{no. of shower holes}}$

At shower exit $v \downarrow \approx \varnothing_{Target} \times f \approx 0.2 - 0.5$ m/s

Axial injection $\vec{v} \approx L_{Target} \times f \approx 8 - 15$ m/s

$t = 0$ $R = 10$ cm $v = 0$

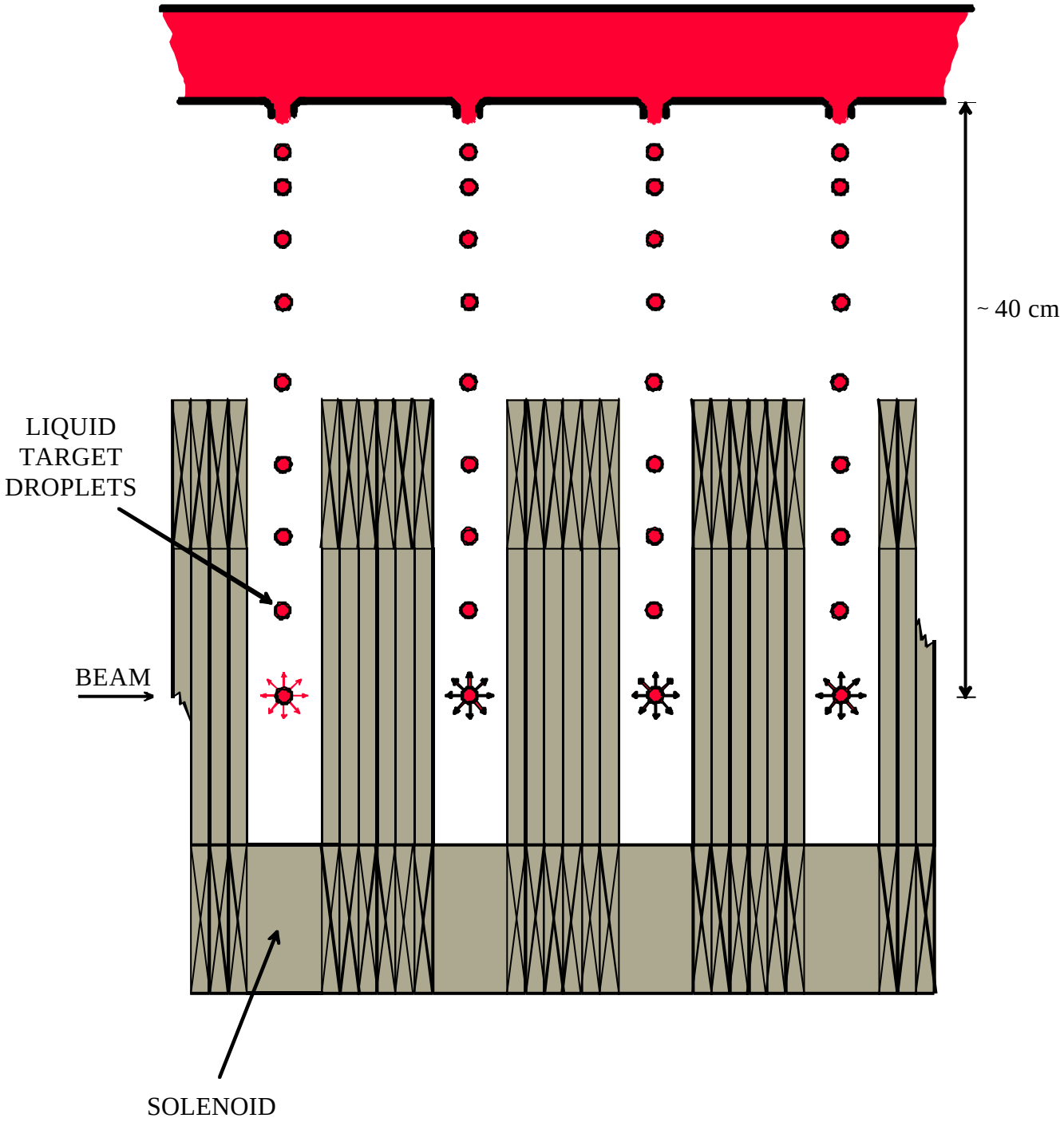
$t_1 = 140$ ms $R = 3$ cm $v \approx 1.4$ m/s

$t_2 = (140 + 20)$ ms $R = 0$ cm $v \approx 1.4$ m/s

- Timing at shower head with 50 Hz,
  have to release every 20 ms a target-let
  Precision ± 1 ms: Target out of position by ± 1.4 mm

- Electr. Polarization of target-lets ?
  $E = v \times B \approx 1.4\ \mathrm{m/s} \times 20\ \mathrm{T} = 28\ \mathrm{V/m}$

- If target No. n destroys target No. n-1, increase distance between them, increase velocity, drop height, pressure.



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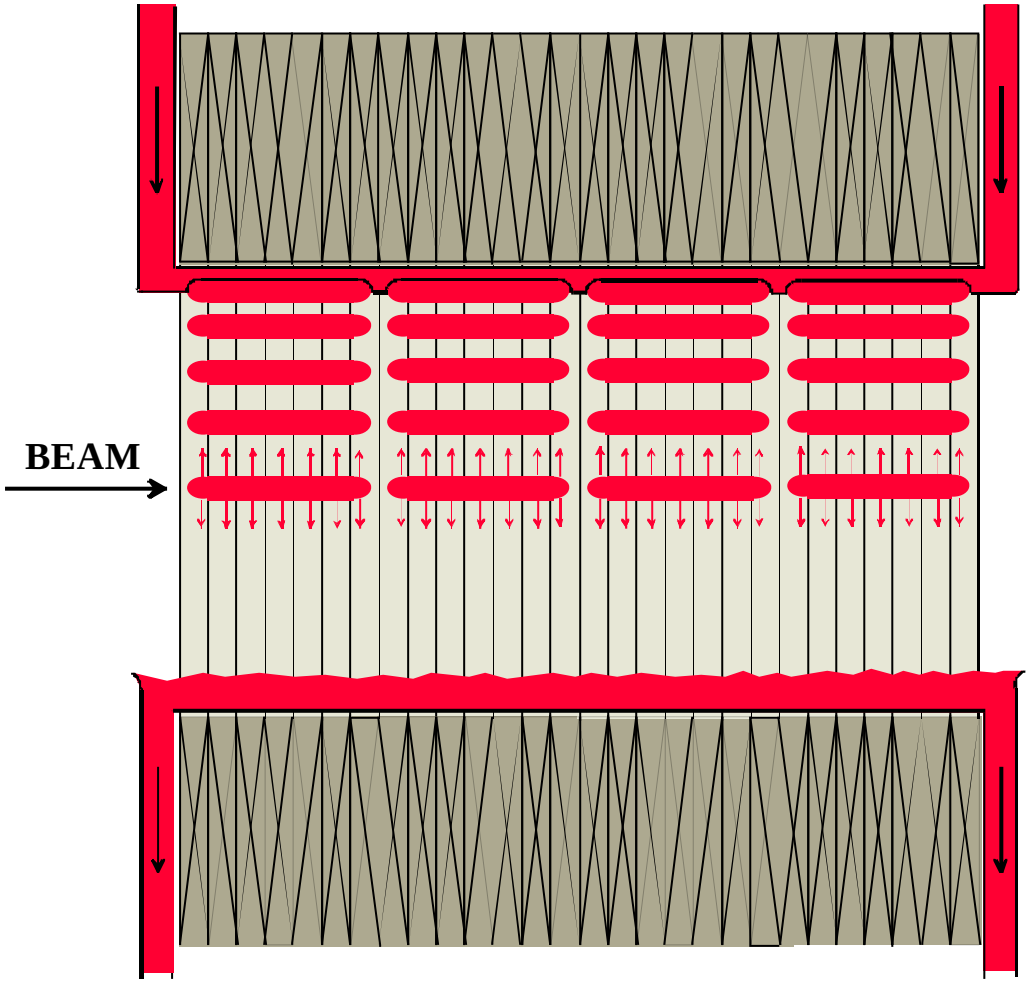
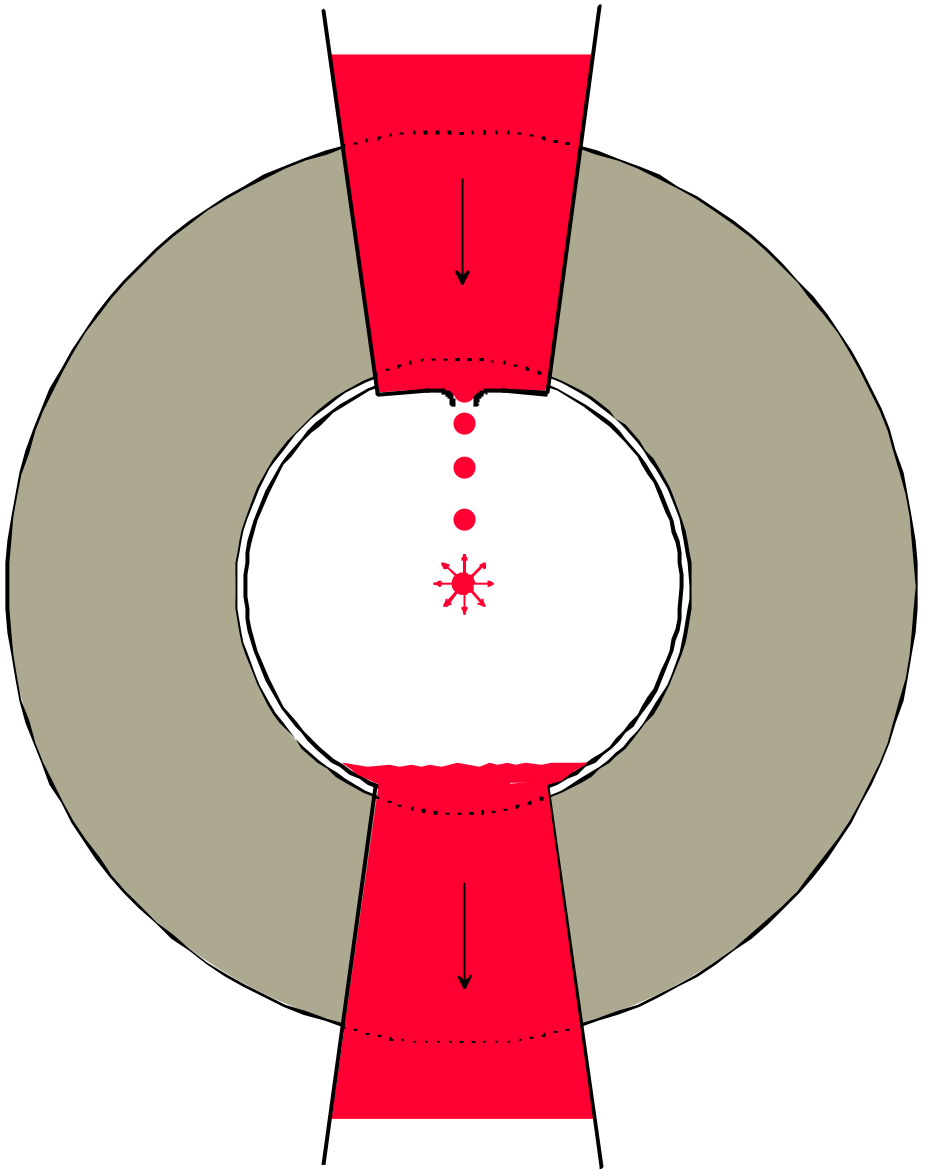
LIQUID TARGET RADIAL INJECTION INTO SOLENOID





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