(Very) low E_{cm} running Prospects?

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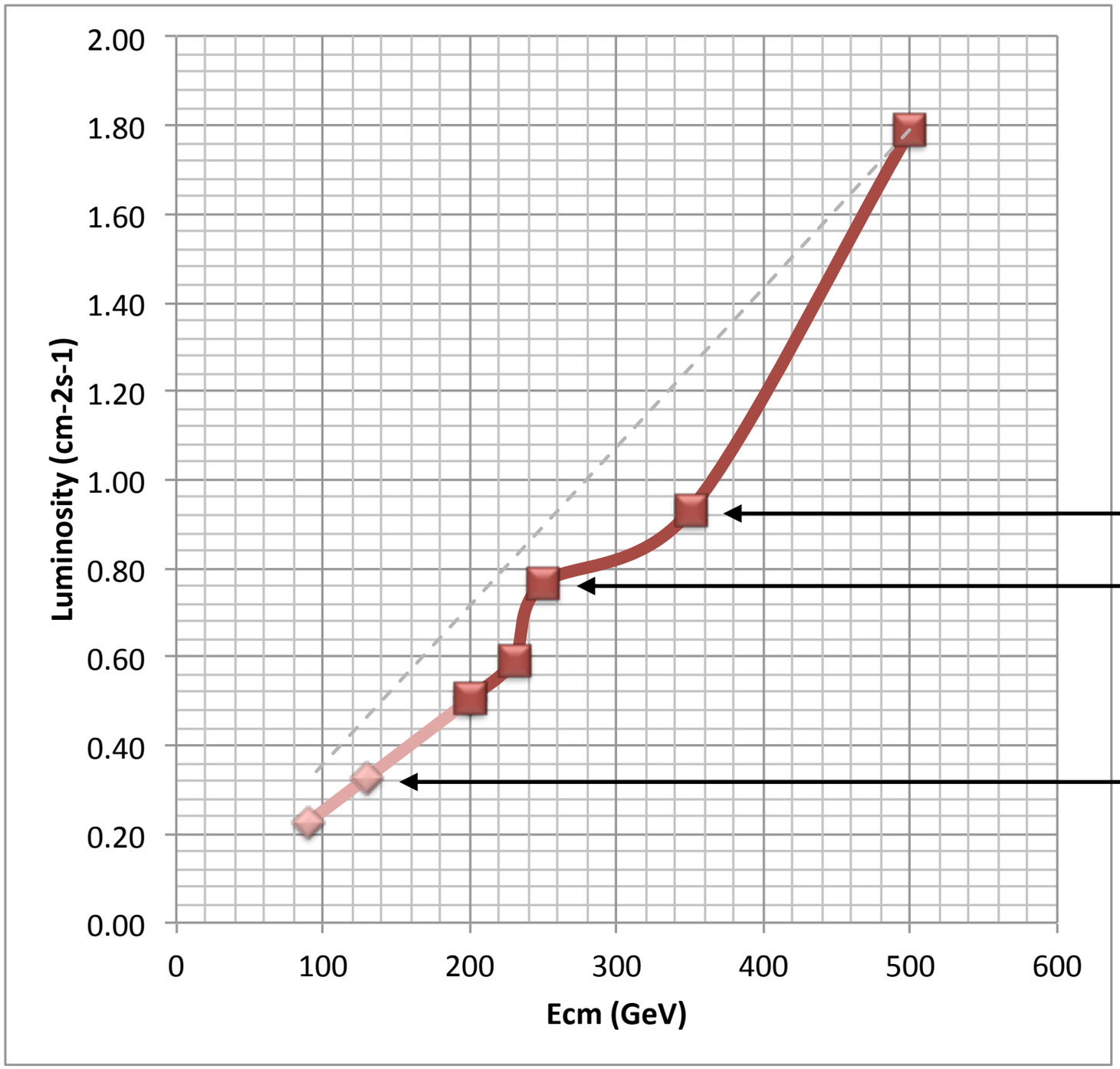
- Third constraint: emittance dilution in linac
  - lower energy beam → larger energy spread → chromatic abb.
    → sensitivity to wakefield

TDR baseline luminosity



constant hor. IP divergence (~ 44 mr)

short final double solution (~ 58 mr)

gamma scaling from 200 GeV ?

likely lower than this

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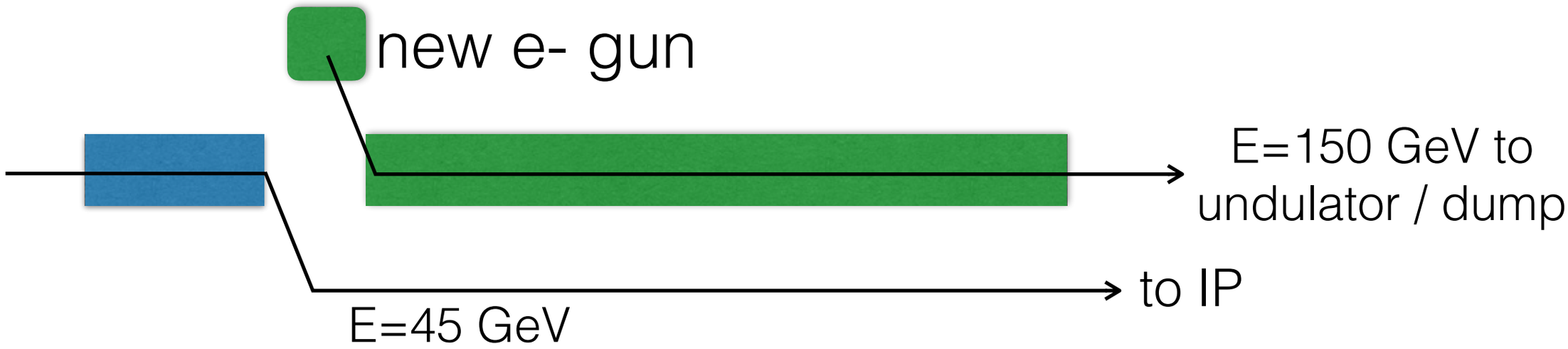
- Linac dynamics simulated for 250 GeV with $\Delta E_{lumi\text{-}prod}$ = 100 GeV
- For 45 GeV beam $\Delta E_{lumi\text{-}prod}$ = -105 GeV ??
  - probably doesn't work

Solution for "Giga Z" ?

Split linac



Major reconfiguration of accelerator
Requires a mini design study

- 3rd beamline in linac tunnel
- additional doglegs, bypasses and possible dumps
- …

300-Hz e-driven just source works as is.
But no polarised e+

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- Push single-beam parameters
  - Low BS allows us to reduce sigma_x
  - Simple gamma scaling ($\mathcal{L}$ ~ 2×10^{33}) has BS ΔE/E ~ 0.1%.
  - Reducing sigma_x by factor 2 ($\mathcal{L}$ → 4×10^{33}) increases ΔE/E ~ 0.4%
  - BUT beware collimation depth and IR beam divergence constraints (theta_x: 84ur → 168ur !!!)

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