Why does the buildup flatten with increasing beam energy?

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Background

- Bragg curves shows dose buildup in entrance region on two different length scales: ~0.1mm and ~10cm
- Analyse secondary particle energy deposition
- Result: ~0.1mm buildup is caused by electrons
- And ~10cm buildup caused by secondary protons
- Define electronic, hadronic and total buildup with respect to expected dose in entrance region (relative reduction)
- This relative reduction becomes constant at beam energies above 200MeV, called flattening/saturation of the buildup

Definition of buildup

Full Bragg curve at 200 MeV

Zoom to entrance region



Behaviour with beam energy



Why is there this saturation at 200MeV beam energy?

Comparison of energy deposit



Secondary protons



Electrons

