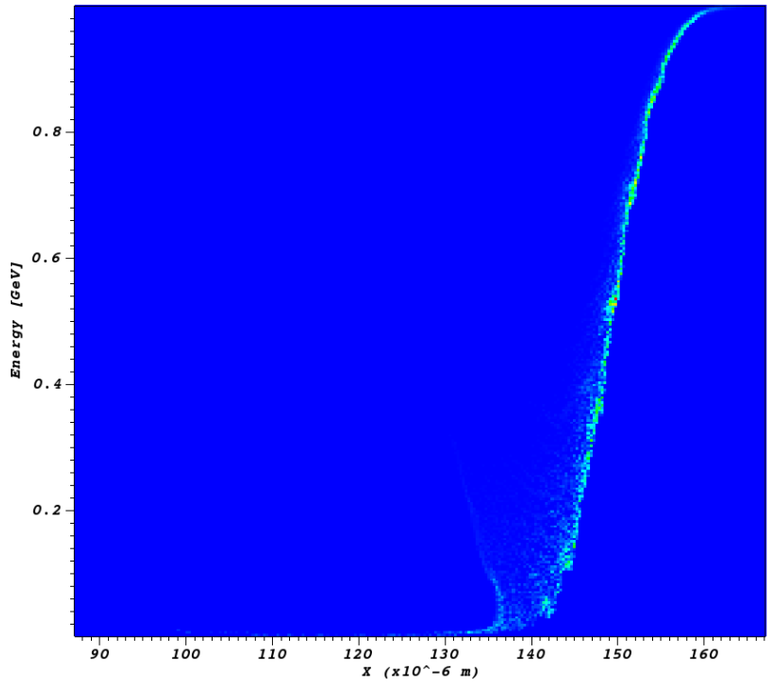
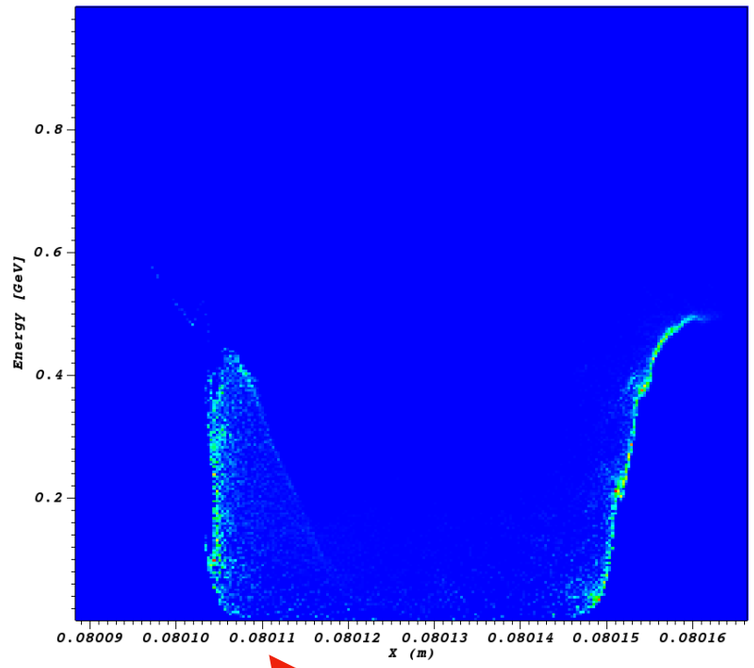
Result from quasilinear passive beam dump (stage 1)
Density: n_0
Total energy: ~45%

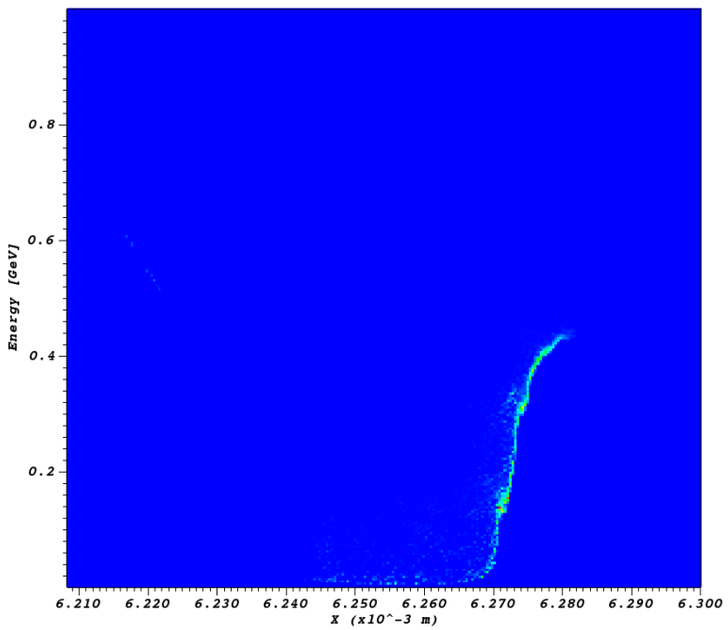


Result from active **beam-driven** dump (stage 2)
Density: n_0
Total energy:~20%



Stage 3: Passive beam dump with density n_1=4n_0, such that the head of the bunch sets up a wakefield where the plasma wavelength is halved. The re-acceleration peak is now in a decelerating and **defocusing** region. The head defocuses the tail.

Result from 2nd passive dump (stage 3)
Density: 4*n_0
Total energy:~ 9%



We end up with a similar energy chirp that we started with in stage 2, with <10% of the energy. For 1 GeV beam one active beam dump is enough.
For higher energy beams we might now be able to repeat stage 2 and 3 until the beam is dumped.