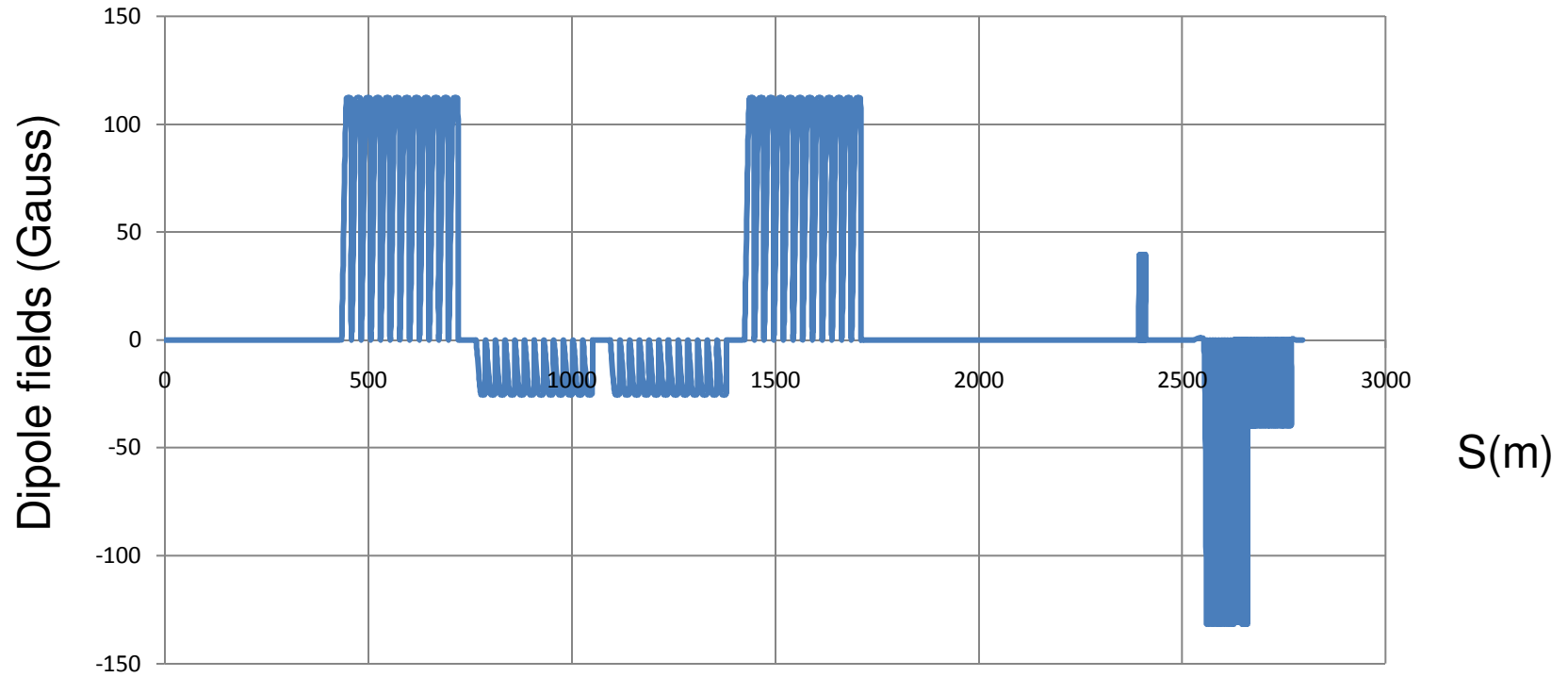


CLIC BDS : Dipole fields at 1.5 TeV



Minimum field ~25 Gauss

Minimum Dipole Field in ILC@250GeV (RDR 500 GeV CM)

The concerns for the range of fields in the ILC :

1. The range to cover 91 GeV CM (Z run) to 250 GeV and upgrade to 500 GeV with the same footprint of the BDS layout.
2. The lowest dipole field at 250 GeV is 125 Gauss. Magnets are decimated and during the upgrade to 500 GeV more dipoles will be installed. The lowest field at 500 GeV in some magnets is 50 Gauss.
3. It was proposed that if the magnet design could not provide the full dynamic range at low field, the magnets can be on several interleaved strings and decreasing the field was achieved by switching off the strings. This work was supposed to be pursued during the TDR phase.
4. Field quality at such low fields and field stability requirements?

Minimum Dipole Fields in CLIC

1. Dipole lengths @1.5 TeV = 11.3 m, gap = ± 8 mm
2. Assumptions/decisions :
 1. the required field change during operation (energy change not more than 10%?)
 2. the 500 GeV magnets will not be used at 1.5 TeV
 3. Field quality requirements (multipoles)
 4. Magnetic field repeatability

Need to decide whether 25 Gauss field is acceptable?

Check with magnet experts (have contacted Cherrill Spencer, SLAC).

3. Emittance growth is $\sim 25\%$ at present and will go up if these fields are increased.