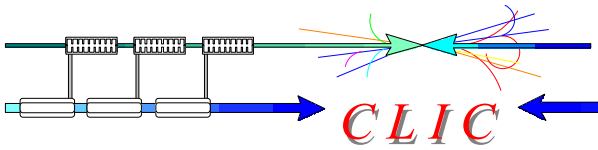

GdfidL for TDS wakefield calculations

Alexej Grudiev
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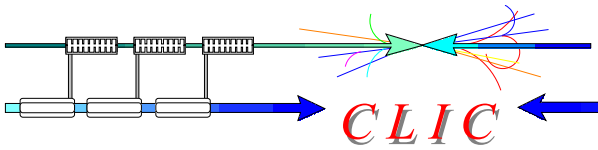


Outline

- Motivation
- Full length Tapered Damped Structure (TDS) results comparison
- Perfectly Matched Layer (PML) and SiC loaded TDS results comparison

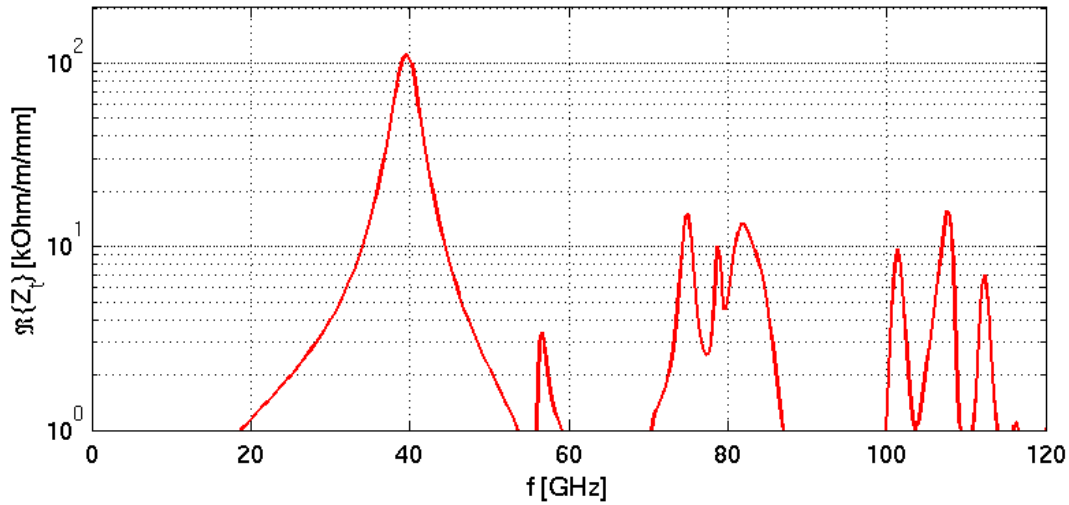
Transverse wakefields calculation

GdfidL in time-domain

$$A_1 = 1120\ V/pC\,mm\,m$$

$$f_1 = 39.66\ GHz$$

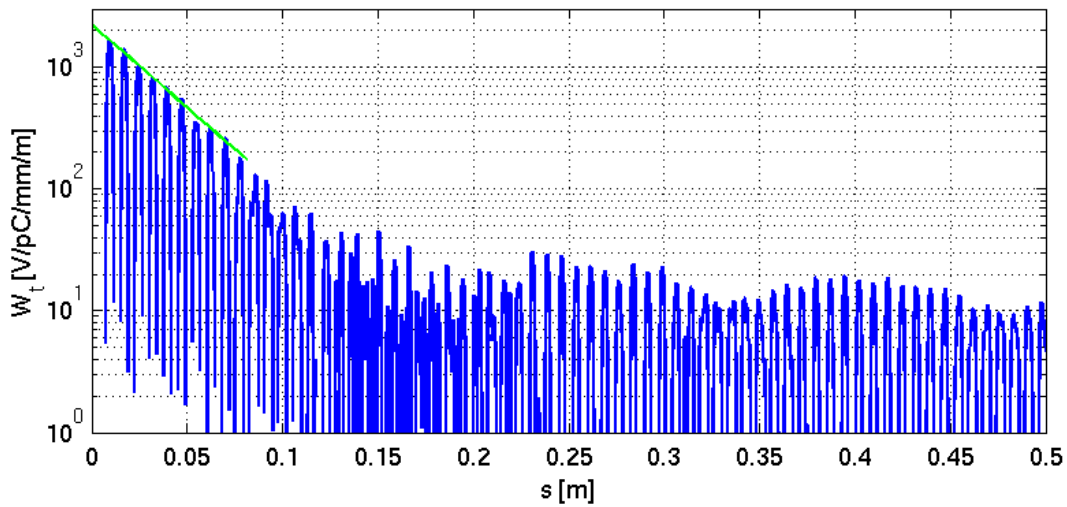
$$Q_1 = 12.6$$



HFSS in frequency-domain

$$f_1 = 39.66\ GHz$$

$$Q_1 = 12.2$$



3-cells model of wakefields

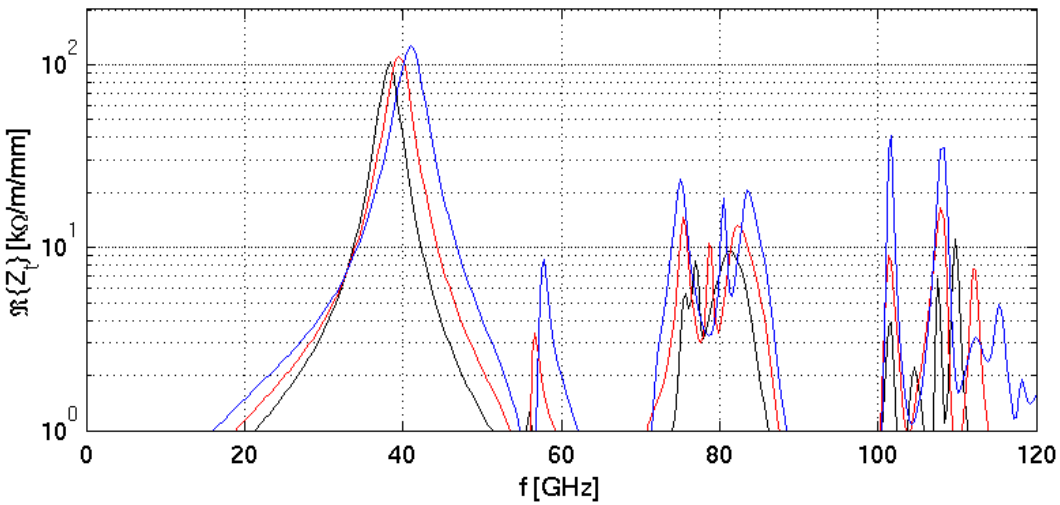
A_1, f_1, Q_1 for each cell are interpolated from its values in the first, middle and last cells and then the structure wakefields are calculated using:

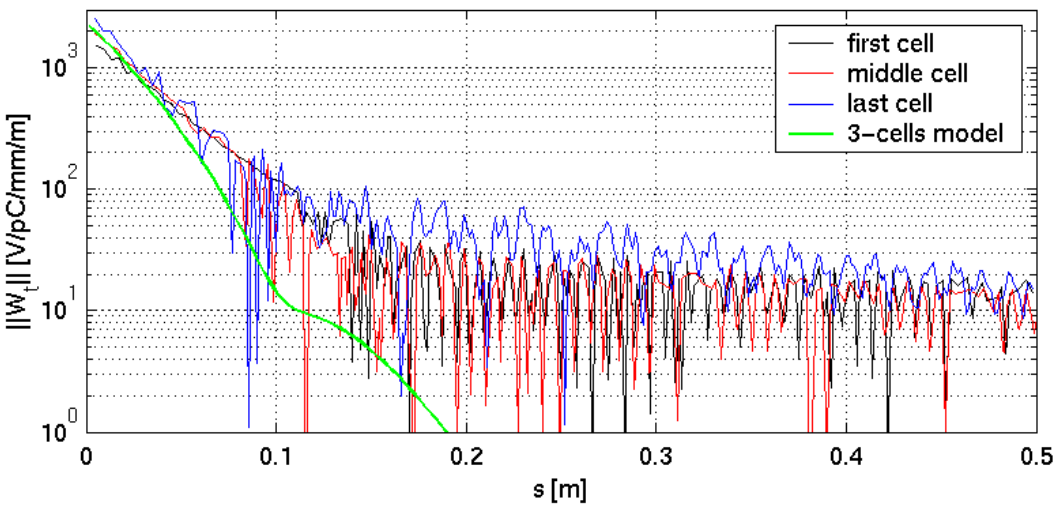
$$W_t = \sum_{i=1}^{N_{cells}} A'_{1i}\, e^{-\frac{\omega_{1i} t}{2Q_{1i}}} \sin(\omega_{1i} t)$$

where

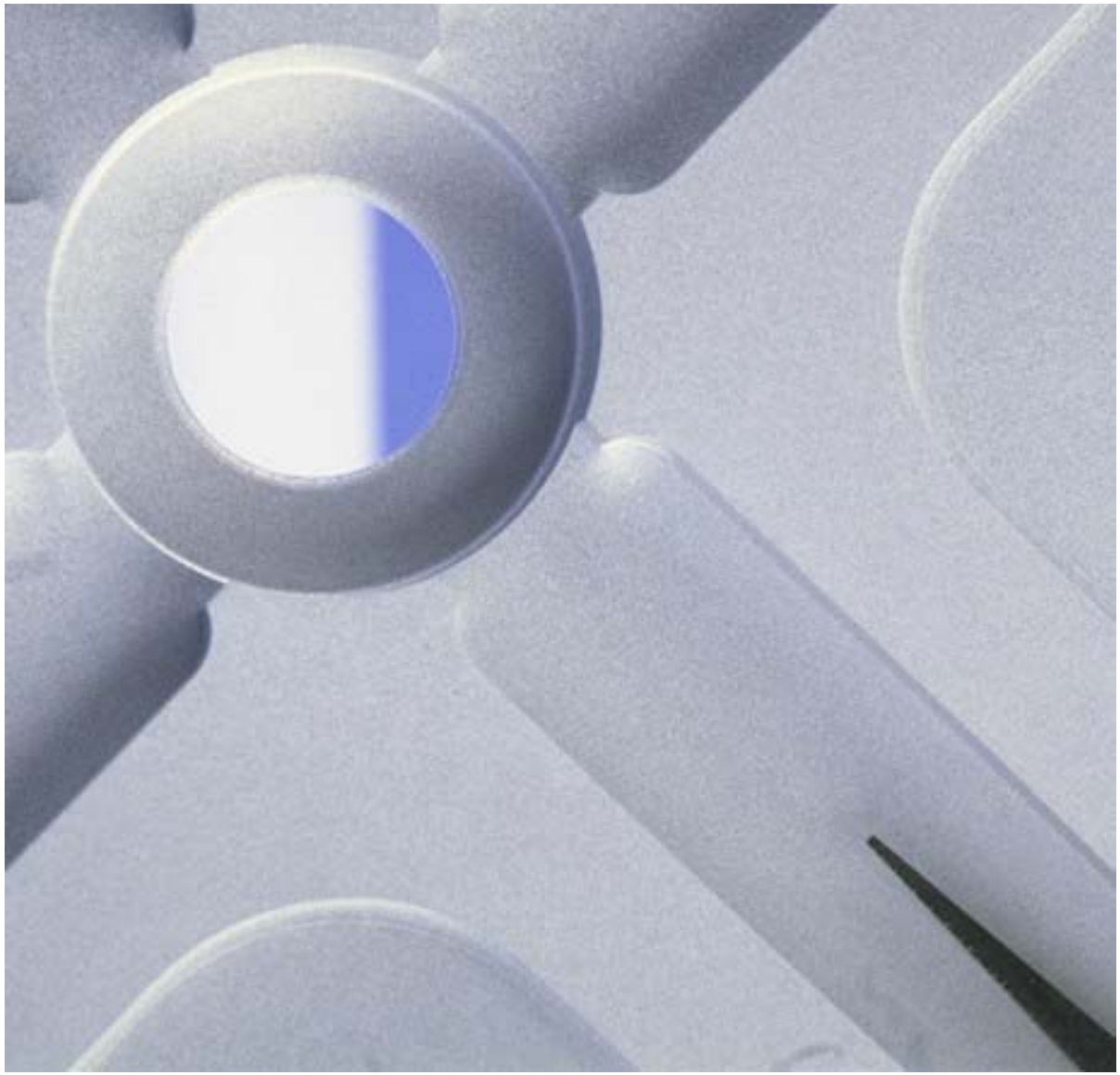
$$A' = A e^{\frac{\omega^2 \sigma^2}{2c^2}}$$

$$\sigma = 0.6\, mm$$

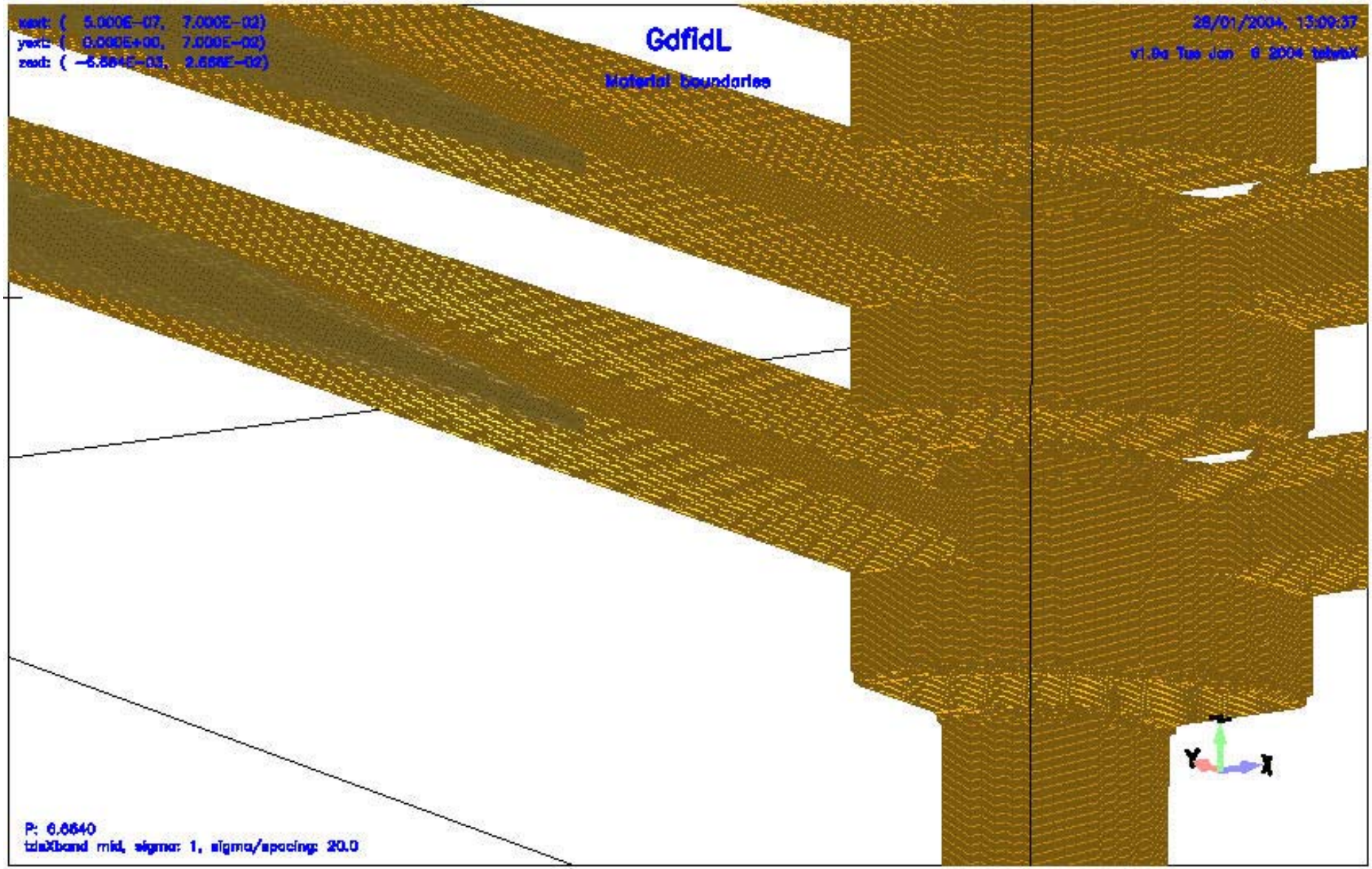




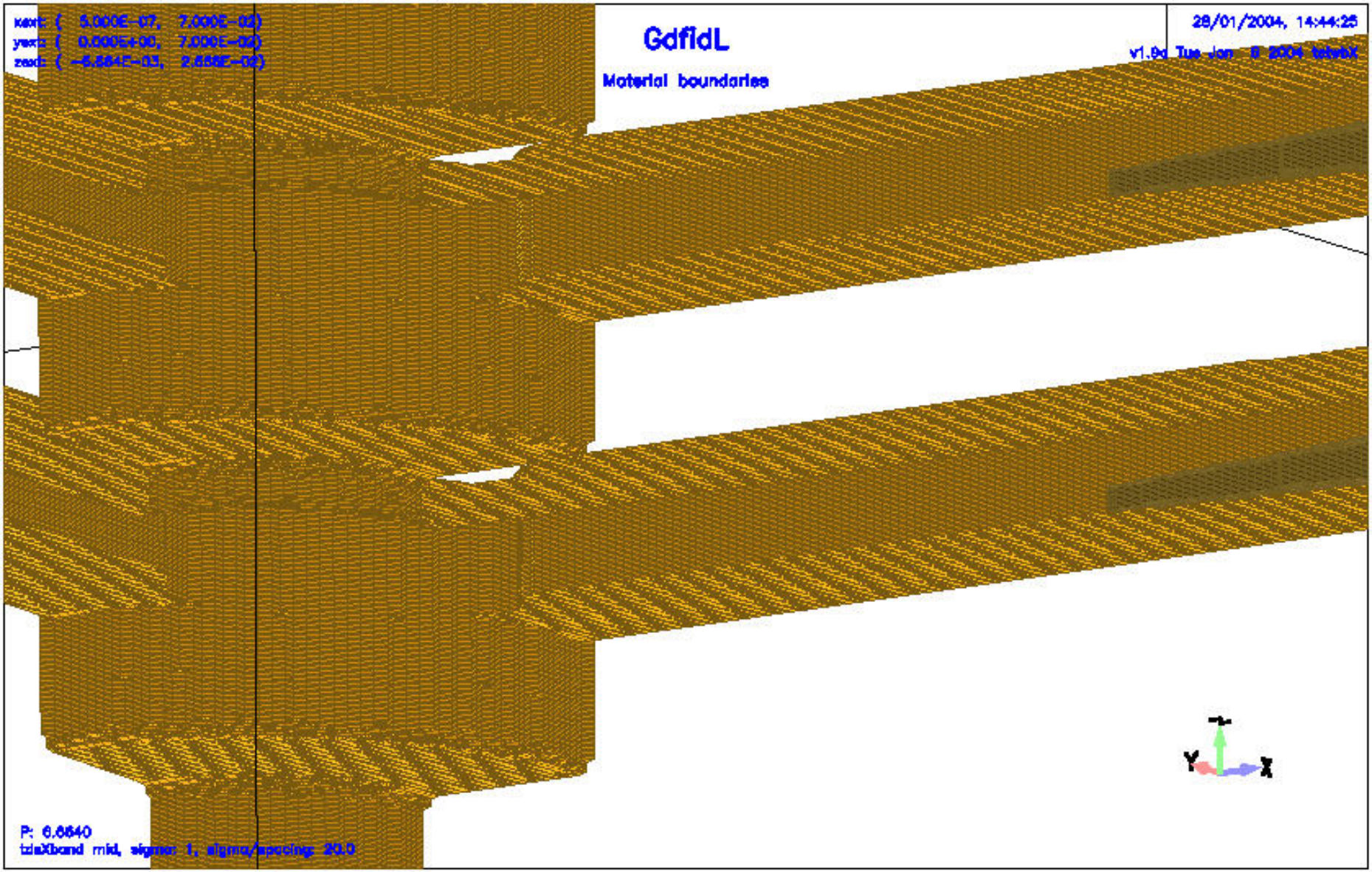
Geometry of TDS



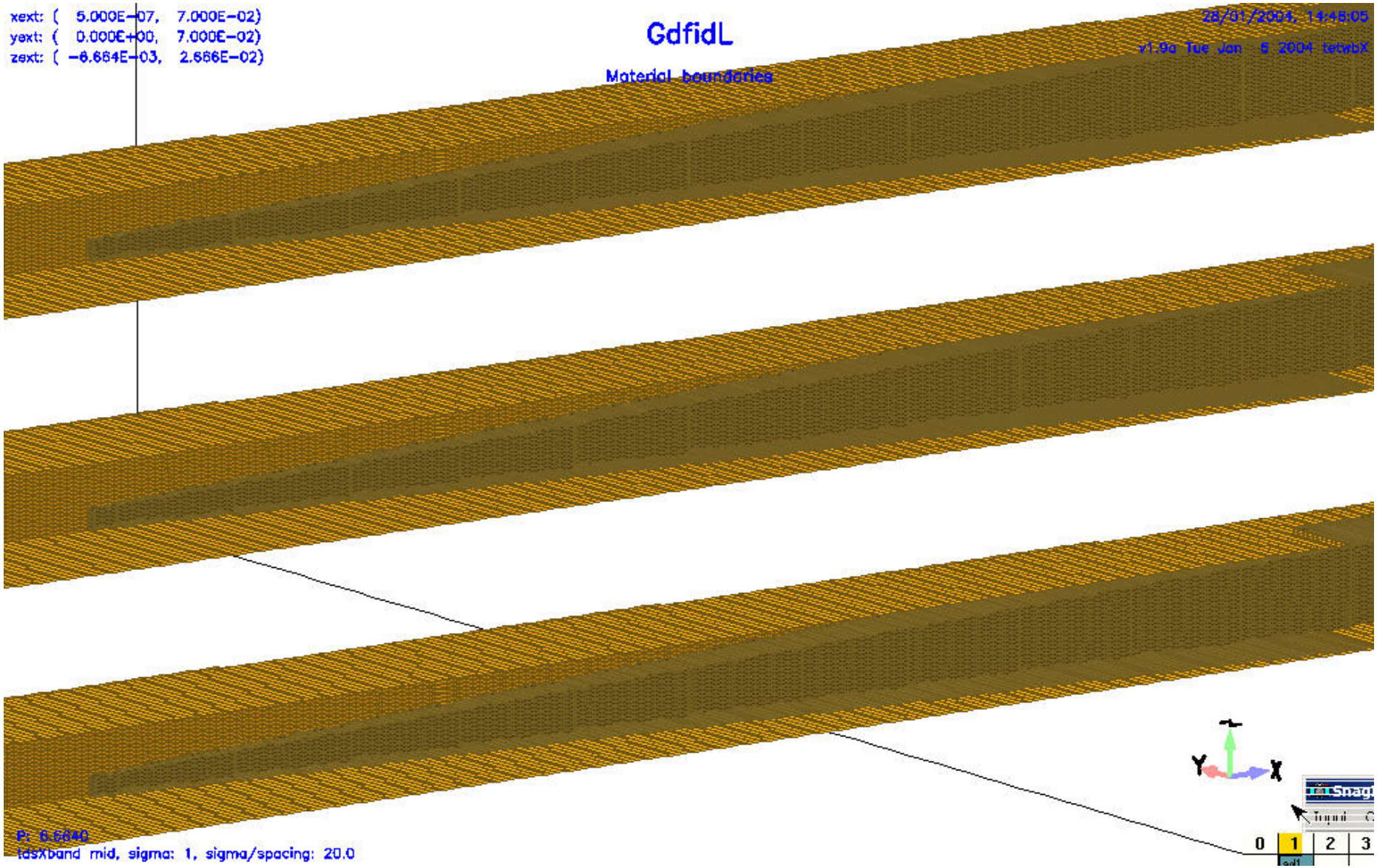
TDS geometry in GdfidL



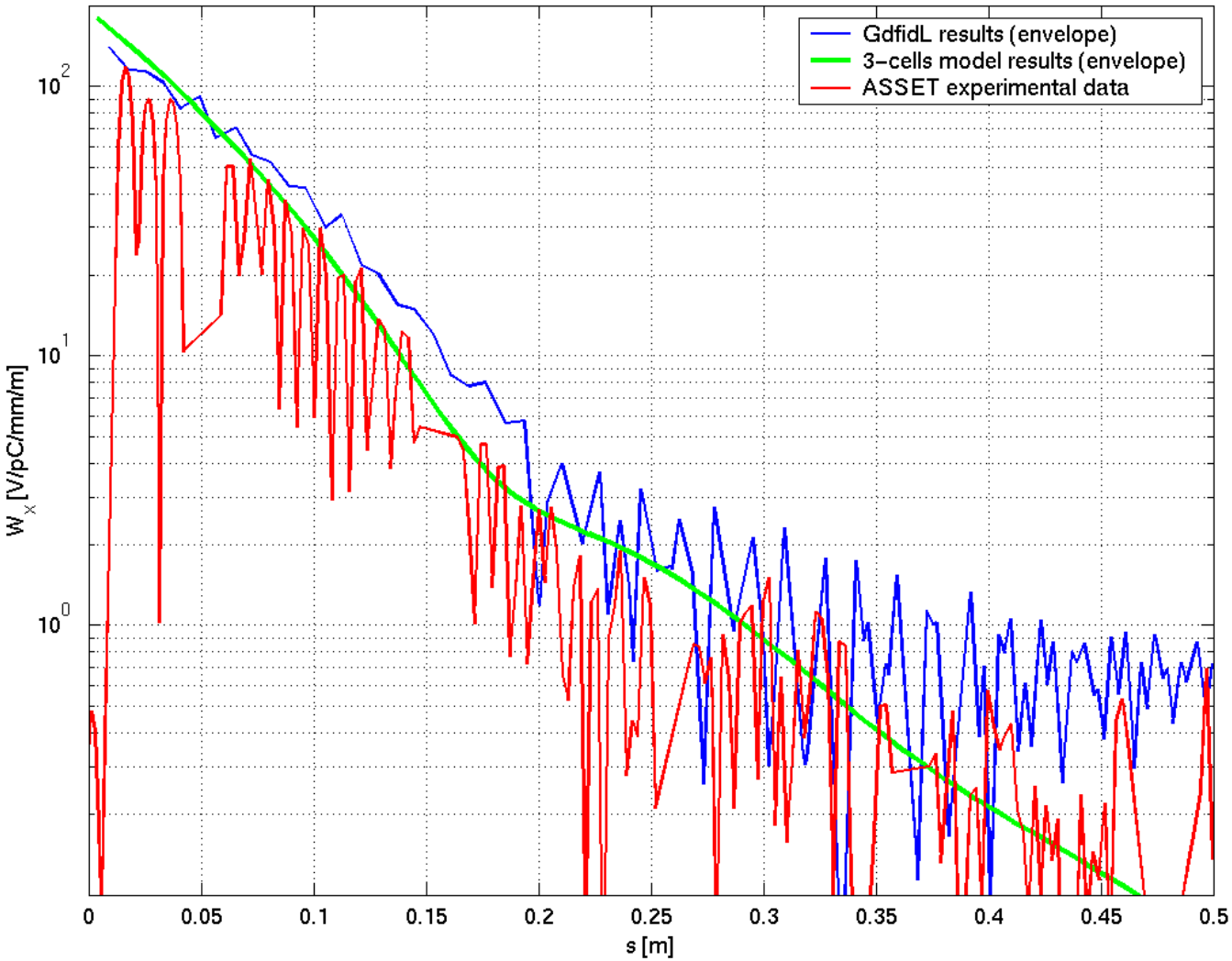
TDS geometry in GdfidL



SiC load geometry in GdfidL



Full length TDS results comparison



PML and SiC loads comparison