CDMS SIGNALS S Burke 12/6/99

BLIP

$A := 1.0$

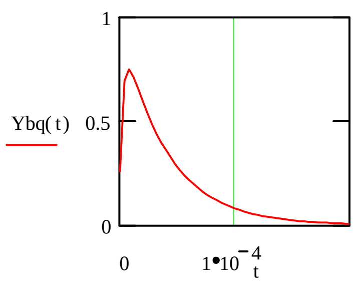
$Trq := 3 \cdot 10^{-6}$ $Trp := 8 \cdot 10^{-3}$

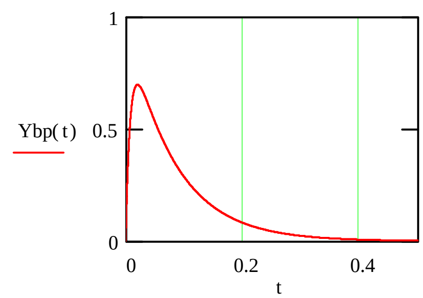
$Tfq := 40 \cdot 10^{-6}$ $Tfp := 80 \cdot 10^{-3}$

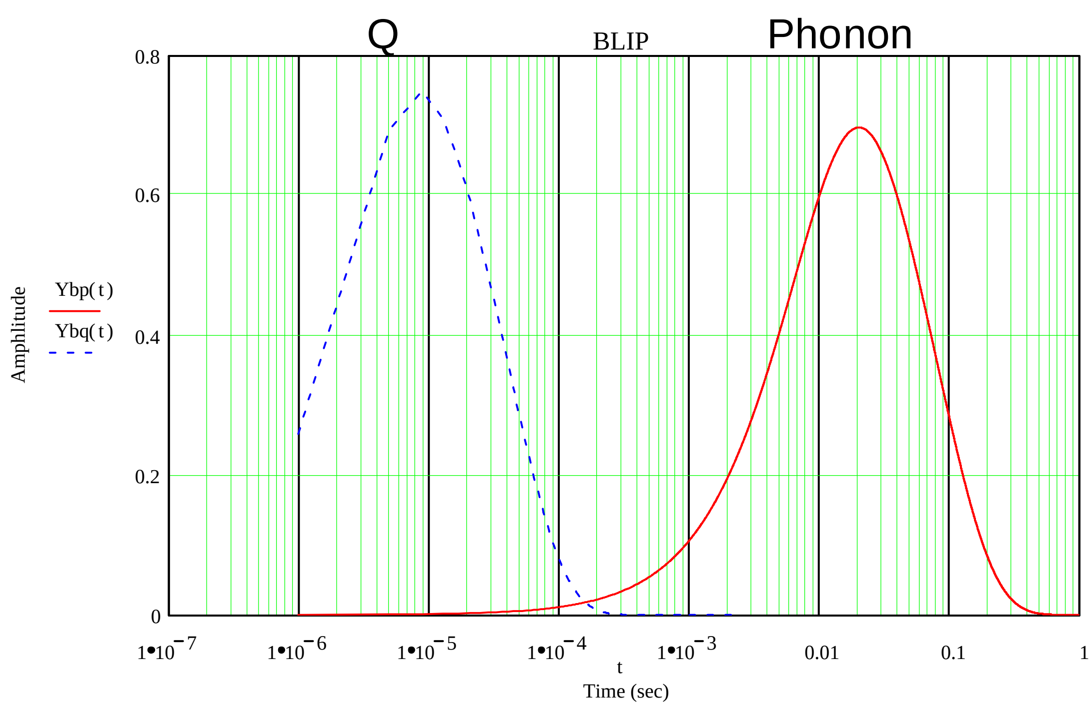
$t := 1 \cdot 10^{-6}, 5 \cdot 10^{-6} .. 1$

$$Ybq(t) := A \cdot \left(1 - \frac{1}{e^{\frac{t}{Trq}}}\right) - A \cdot \left(1 - \frac{1}{e^{\frac{t}{Tfq}}}\right)$$

$$Ybp(t) := A \cdot \left(1 - \frac{1}{e^{\frac{t}{Trp}}}\right) - A \cdot \left(1 - \frac{1}{e^{\frac{t}{Tfp}}}\right)$$







$A := 1.0$

ZIP

$Trzqg1 := 20 \cdot 10^{-6}$ $\quad$ $Trzqg2 := 100 \cdot 10^{-6}$

$Tfzqg := 400 \cdot 10^{-6}$

$Trzqs1 := 5 \cdot 10^{-6}$ $\quad$ $Trzqs2 := 60 \cdot 10^{-6}$

$t := 1 \cdot 10^{-6}, 2 \cdot 10^{-6} .. 1000 \cdot 10^{-6}$ $\quad$ $Tfzqs := 110 \cdot 10^{-6}$

$$Yzqg1(t) := A \cdot \left(1 - \frac{1}{e^{\frac{t}{Trzqg1}}}\right) - A \cdot \left(1 - \frac{1}{e^{\frac{t}{Tfzqg}}}\right)$$

$$Yzqg2(t) := A \cdot \left(1 - \frac{1}{e^{\frac{t}{Trzqg2}}}\right) - A \cdot \left(1 - \frac{1}{e^{\frac{t}{Tfzqg}}}\right)$$

$$Yzqs1(t) := A \cdot \left(1 - \frac{1}{e^{\frac{t}{Trzqs1}}}\right) - A \cdot \left(1 - \frac{1}{e^{\frac{t}{Tfzqs}}}\right)$$

$$Yzqs2(t) := A \cdot \left(1 - \frac{1}{e^{\frac{t}{Trzqs2}}}\right) - A \cdot \left(1 - \frac{1}{e^{\frac{t}{Tfzqs}}}\right)$$

The rise times of the signals vary depending on the position of the interaction in the detector. Charge signals are shown, Phonon signals are x4 slower.

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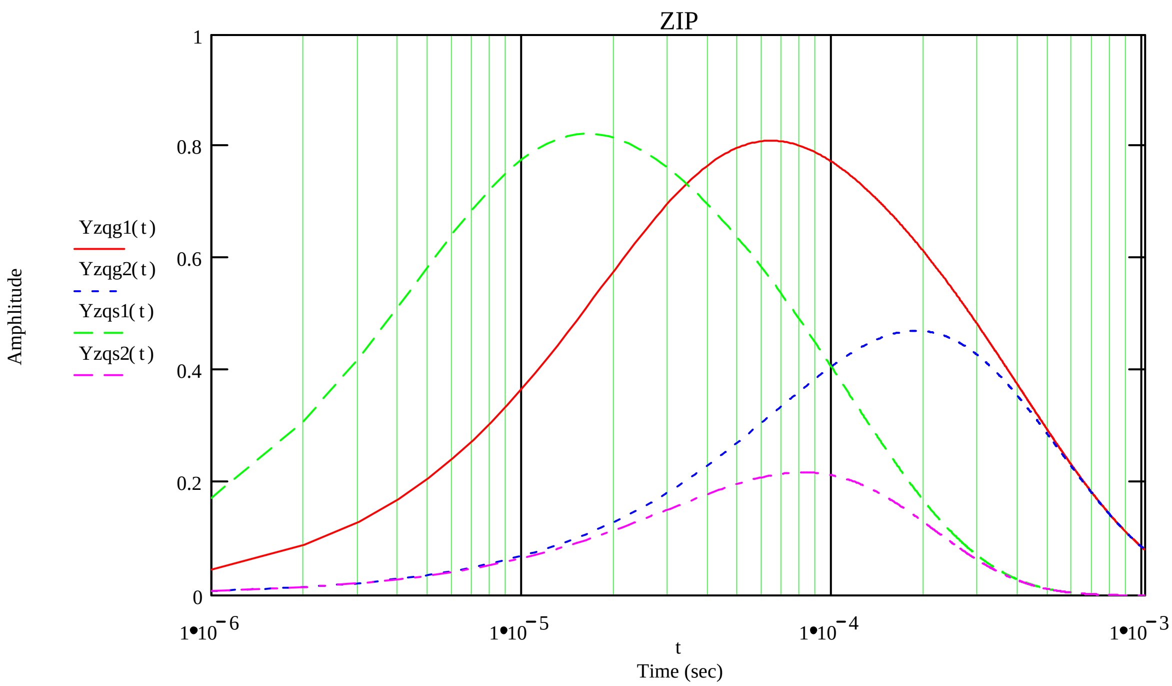

ref: 2 December 1999 e-mail from R. Gaitskell of UCB

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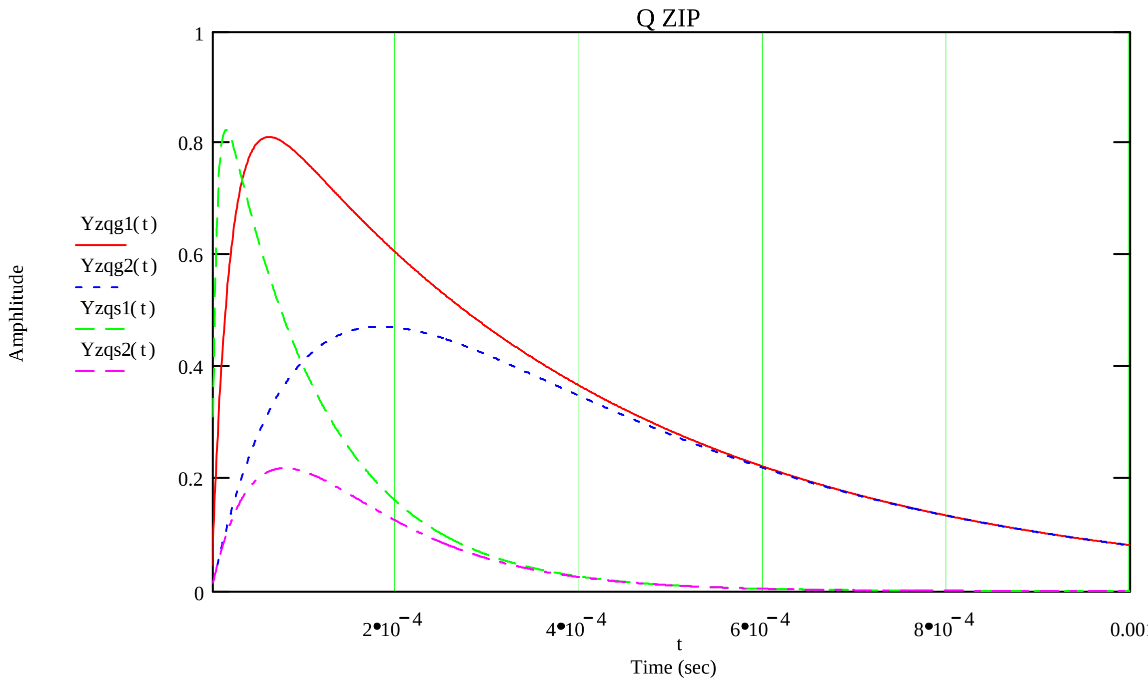
Q ZIP
1
0.8
0.6
0.4
0.2
0
Amplitude
Yzqg1(t)
Yzqg2(t)
Yzqs1(t)
Yzqs2(t)
2•10−4
4•10−4
6•10−4
8•10−4
0.001
t
Time (sec)