

# Status of cross-talk study

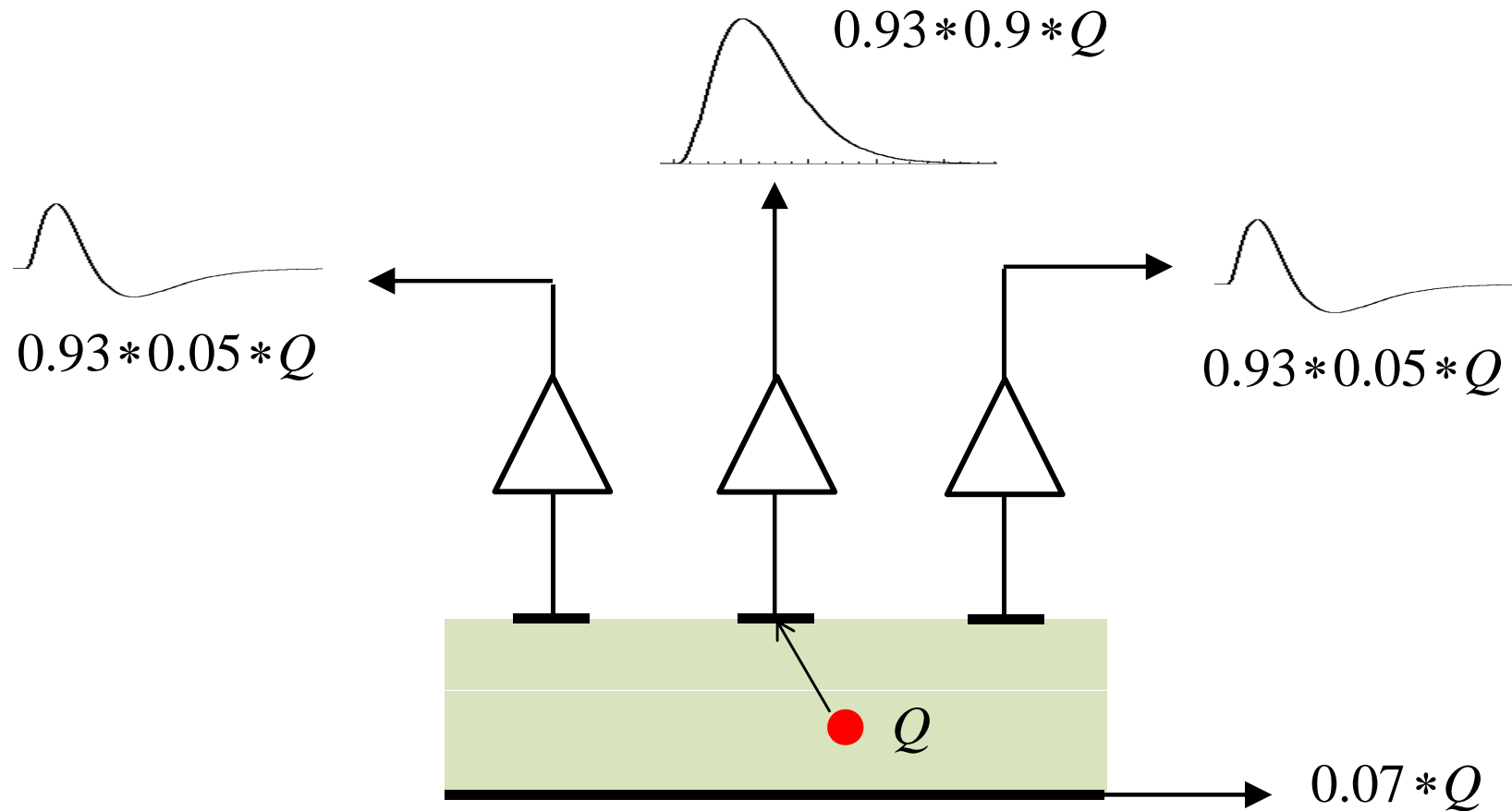
10 August, 2010

SCT Digitization TF meeting

Taka Kondo (KEK)

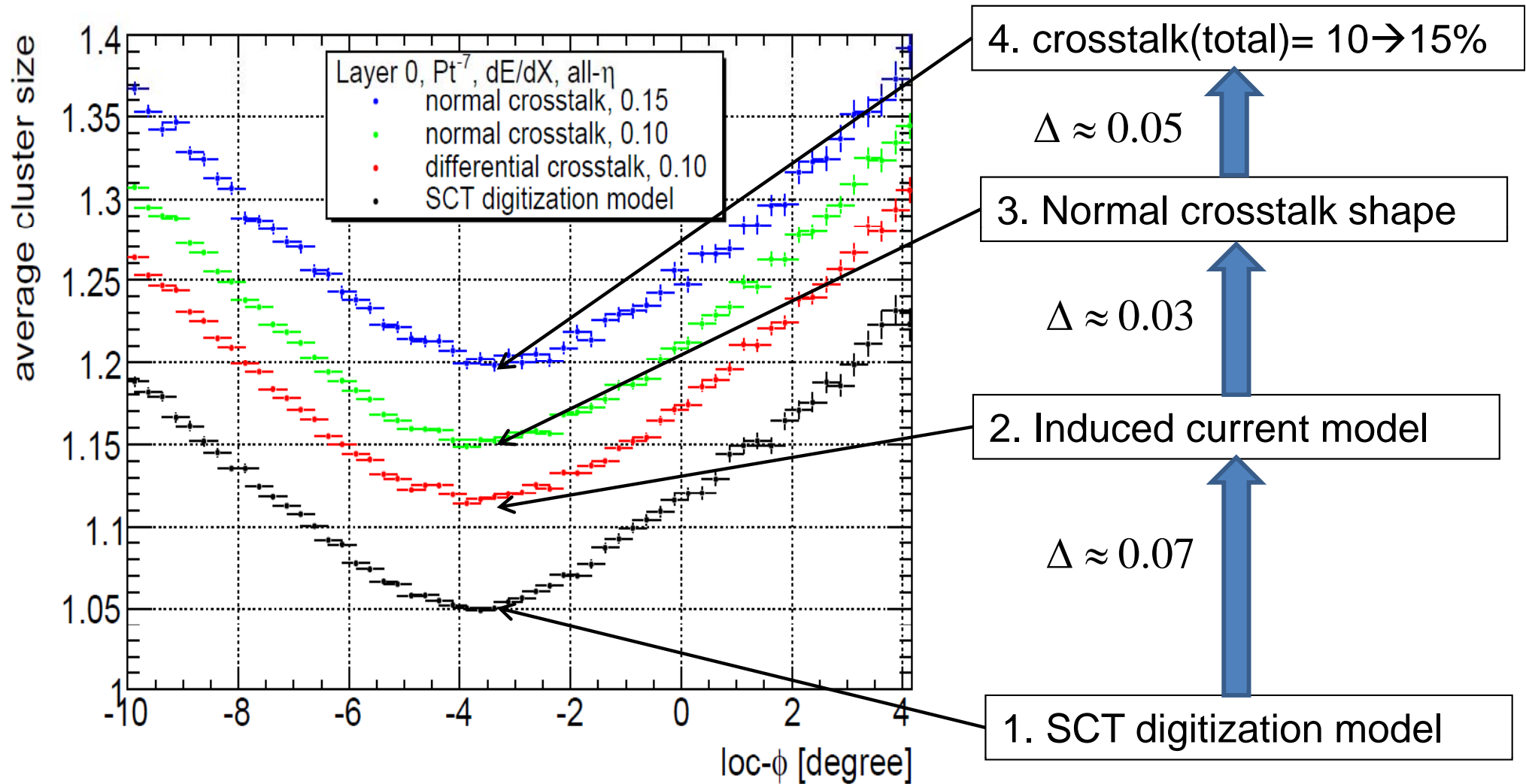
## Current SCT digitization model

- (1) 7% of the hole charge is absorbed by the HV plane.
- (2) 5% (10% total) of the hole charge is absorbed by the adjacent strip.
- (3) Shape of crosstalk pulse is a differential form of the main pulse .



In my previous TF talk on 27 July, 10

$\Delta \langle \text{cluster size} \rangle_{\min} = +0.05$  from 10%  $\rightarrow$  15% in side cross-talk  
 $\Delta \langle \text{cluster size} \rangle_{\min} = +0.03$  from “differential” to “normal” shape



From Szymon Gadomski's paper (ATL-SOFT-2001-005)

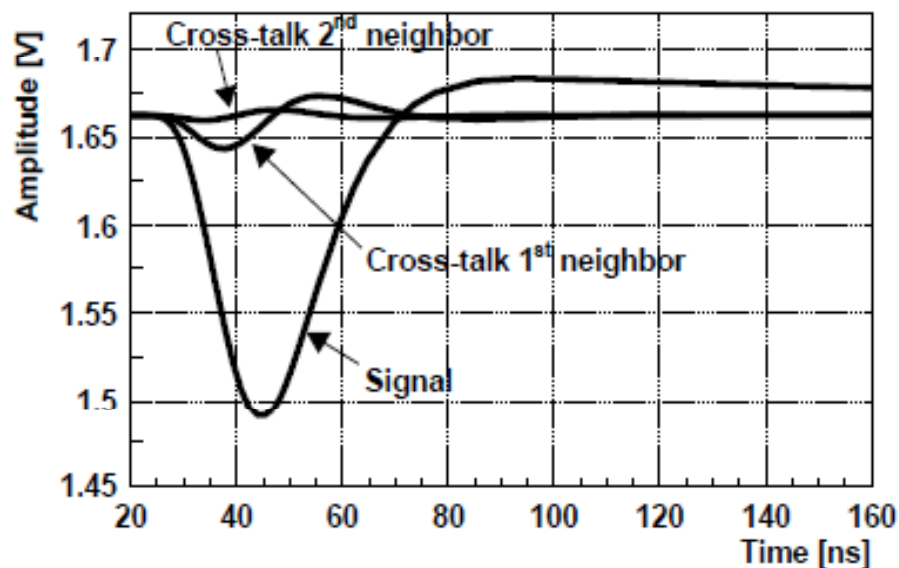
Capacitance to **back plane** creates effective charge loss that is of the order of **2%**.

.....Let us label the digitization parameter describing the cross-talk as  $K$ . The parameter is set to **10%**. ...The function  $b(t)$  is *the derivative* of  $a(t)$ ..... The signal on the neighbour strip is a faster pulse, more influenced by the ballistic deficit.

## Contact to Jan Kaplon

Through Shaun, I contacted Jan Kaplon.

(J. Kaplon) ....Including limited bandwidth .....  $Z_{in}$  is complex.  
For this reason the **crosstalk is in principle closer to differential**  
than "normal". .....you can look on my thesis (chapter 1.2).



← Fig. 4.6 of Kaplon's thesis

This is a SPICE simulation. I have asked him to provide analytic form by mid. September.