

DAQ TB 2012

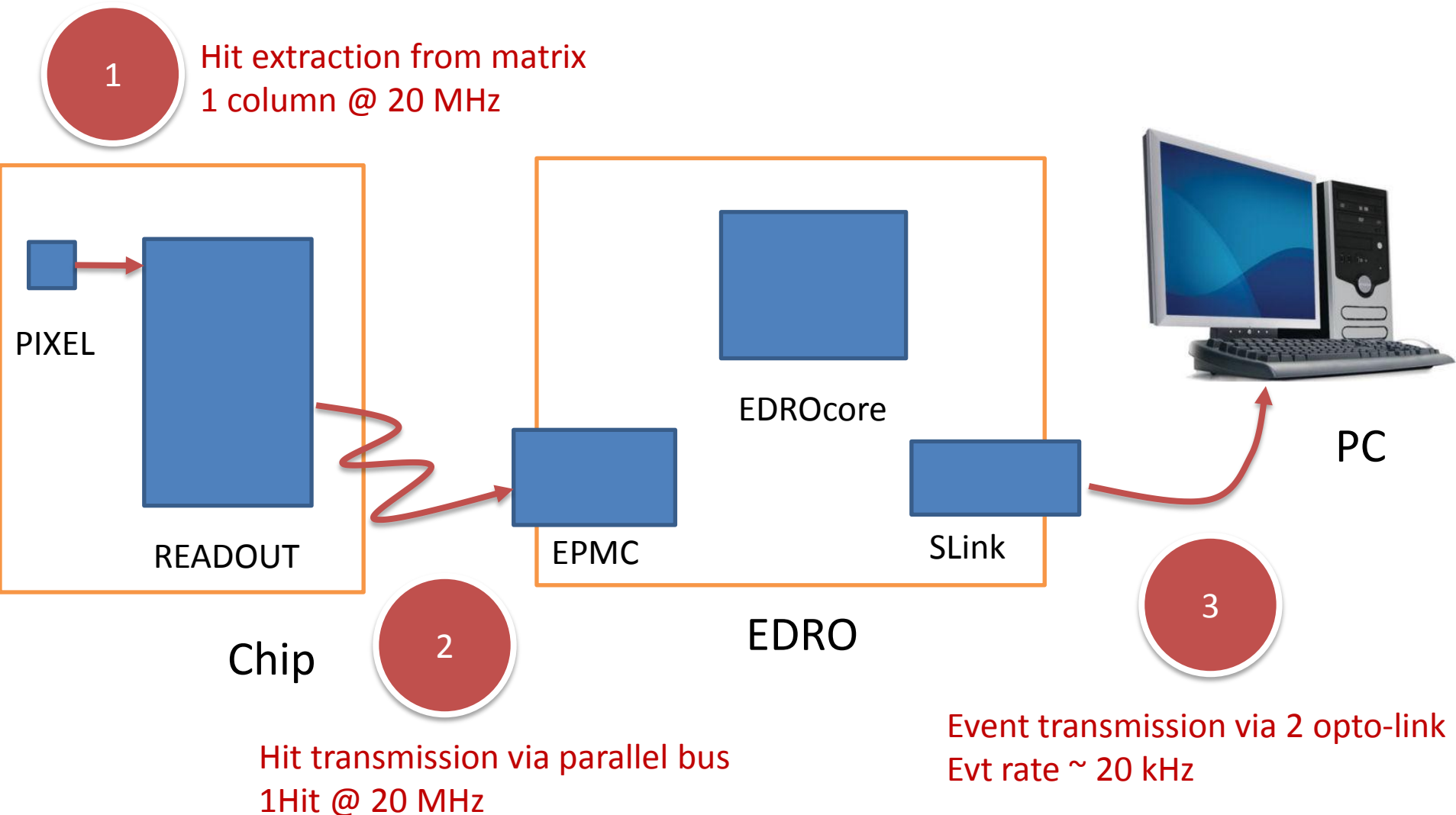
Masks / Rates

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Outline

- Data Flow → crucial channels and bottlenecks
- Masks & Filters: effectiveness and details for:
 - Chip APSEL3D_TC / 4D
 - Chip SPX0
 - Chip INMAPS
- Set Masks on the DAQ system with SlimGui v. 2012

Data Flow – crucial channels & bottlenecks



Channel Saturation Effects

1

Pixels are read out with increasing delay → DEAD TIME

2

Hits cannot flow out of chip → HIT LOSS (SPX0, INMAPS)
→ DEAD TIME (APSEL3D_TC/4D)

3

Hits cannot flow out of EDRO → Back-Pressure
→ HIT LOSS

APSEL3D_TC /4D Mask

Relief on Channel

X

- MP masks (4x4 pixel)
 - Inhibit Latch_enable of MP
 - **3D_TC**: 16 bit
 - **4D**: 256 bit
- Row masks
 - **3D_TC**: 8 bit
 - **4D**: 32 bit
- DAQ Hit Filter
 - Choice of 20 pixels

1

1

3

SPX0 Mask

- MP masks (2x8 pixel)
 - Latch_enable always active
 - Inhibit fastOR
 - 256 bit
- DAQ hit filter
 - Choice of 20 pixels



INMAPS

- In-pixel masks
 - Inhibit Latch_enable
 - 4096 bit
- Peripheral masks
 - columns:
 - 32 bit
 - Inhibit col. latch_enable
 - rows :
 - 64 bit
 - (32 bit inhibit sparsifiers for SM0, 32 bit for SM1)
 - Latch enable always active
- DAQ hit filter
 - Choice of 20 pixels

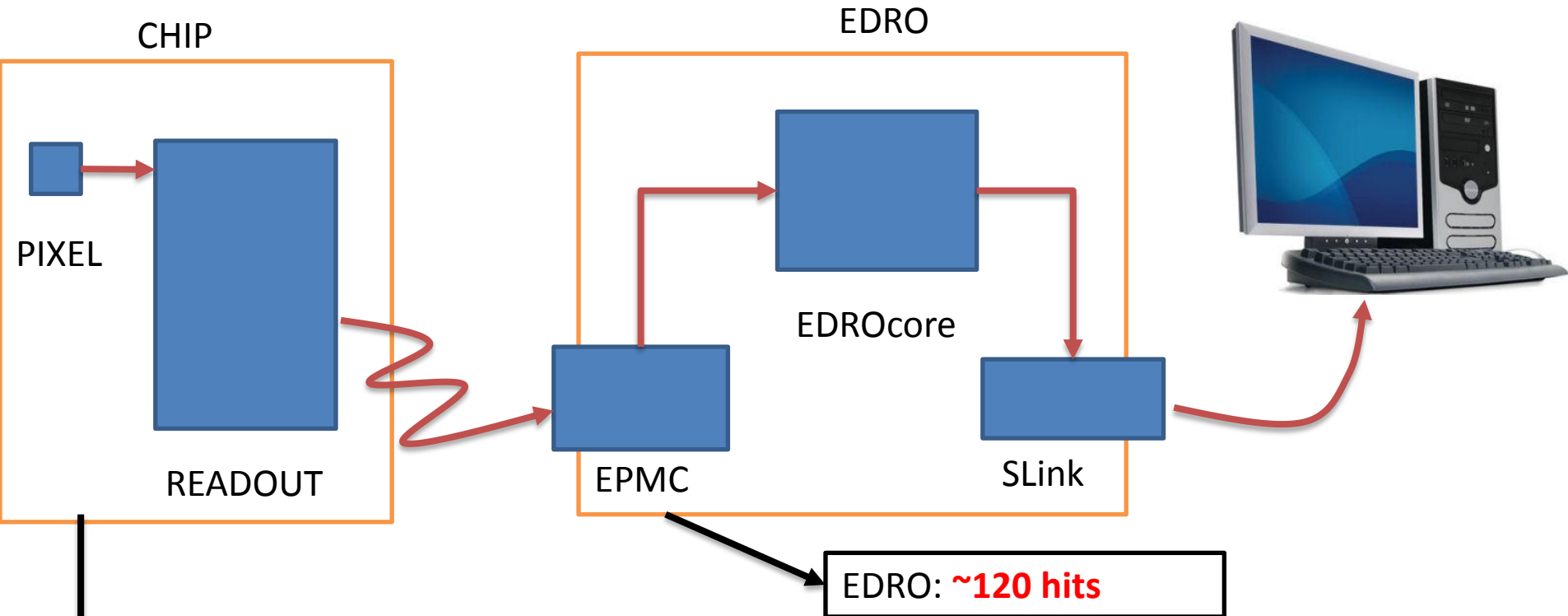


Relief on Channel



Events & Max Event Size

#define Event : array of hits with same TS



CHIP

Apel3D_TC/4D : **no hit limits** (readout sweep wait with barrel back-pressure) → dead time

SPX0 : **hits** < 16 to be sure (8 B2 da 8 hit, 2 B1 da 64 hit)

INMAPS : **hits** < 128 (2 B1 da 64 hit)

APSEL4D MP mask GUI

Kill/Inject APSEL Chip Dialog

Enable Mask Inject PxMask

An ENABLED Macro Pixel is SELECTED (bit=1) Enable All Macro Pixels Kill All Macro Pixels

	12	12	11	11	10	10	10	96	92	88	84	80	76	72	68	64	60	56	52	48	44	40	36	32	28	24	20	16	12	8	4	0
28-31	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
24-27	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
20-23	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
16-19	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12-15	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8-11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4-7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
0-3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

An ENABLED Row is SELECTED (bit=1) Enable All Rows Kill All Rows

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Help OK Cancel

SPX0 Mask GUI

The GUI window is titled "Set MP mask for SPX0". It features a yellow instruction box on the left, a central grid of checkboxes, and control buttons on the right and bottom.

Instructions:

- Check the MP you want to ENABLE.
- Uncheck the MP you want to MASKS.
- Move pointer over a checkbox to display the MP coordinates.

Grid Structure:

- The grid is divided into two columns: **SM0** (bits 0-31) and **SM1** (bits 32-127).
- There are 4 rows, each labeled "set line" on the left.
- Each row contains 32 checkboxes for SM0 and 32 checkboxes for SM1, totaling 64 checkboxes per row.
- The grid is indexed from 0 to 127 horizontally and 0 to 31 vertically.

Buttons:

- Check ALL** (top right)
- Uncheck ALL** (middle right)
- Help** (bottom left)
- OK** (bottom right)
- Cancel** (bottom right)

INMAPS Peripheral mask GUI

Set peripheral mask for INMAPS

Peripheral Masks

Check the row/col you want to ENABLE.
Uncheck the row/col you want to MASK.
Move pointer over a checkbox to display the coordinates.

Check ALL

Uncheck ALL

Row Masks
SM0

SM0 SM1

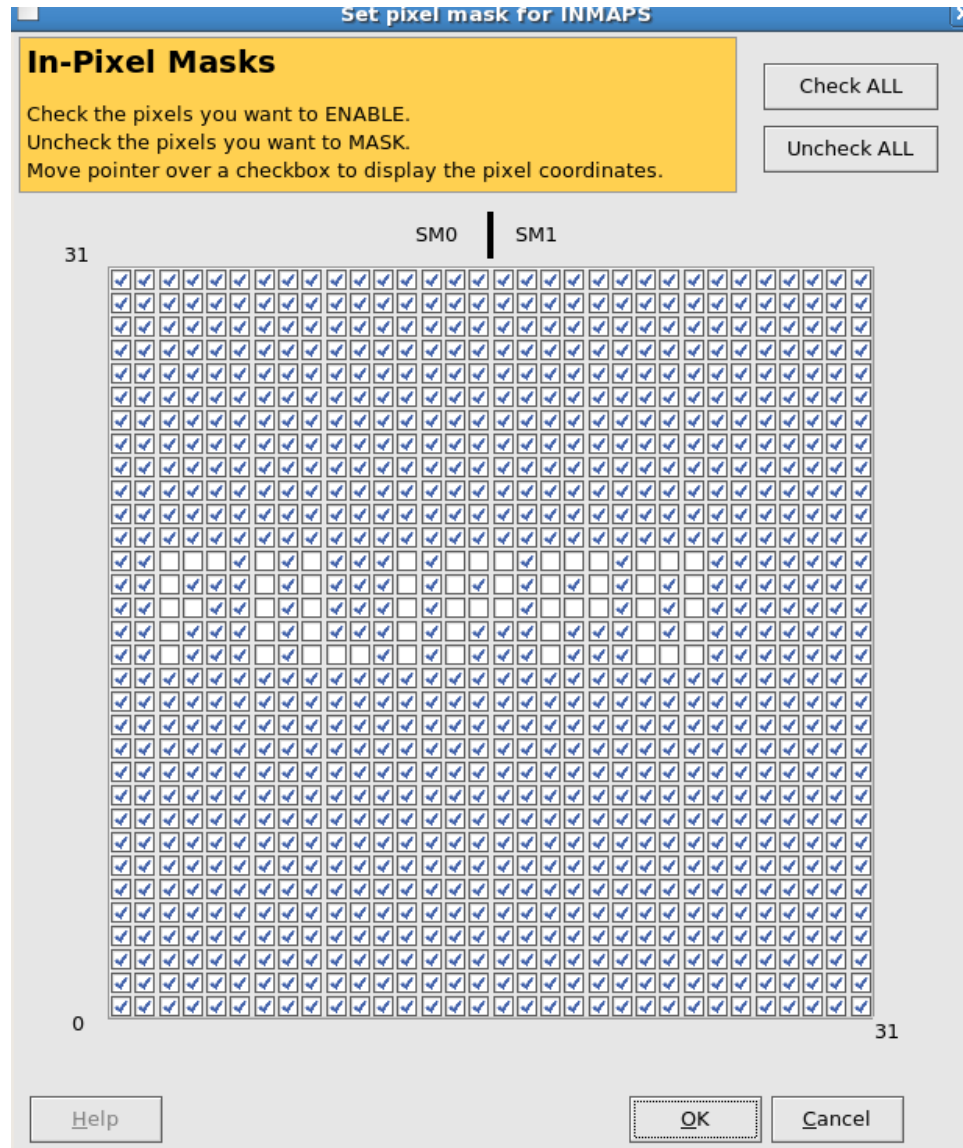
Row Masks
SM1

Px 0:0

Col Masks

Help OK Cancel

INMAPS In-pixel Mask GUI



Hit Filter on EPMC card

Set the Hit Filter

	X coord.	Y coord.		X coord.	Y coord.
<input type="checkbox"/> filter enable	0	▼	0	▼	
<input type="checkbox"/> filter enable	0	▼	0	▼	
<input type="checkbox"/> filter enable	0	▼	0	▼	
<input type="checkbox"/> filter enable	0	▼	0	▼	
<input type="checkbox"/> filter enable	0	▼	0	▼	
<input type="checkbox"/> filter enable	0	▼	0	▼	
<input type="checkbox"/> filter enable	0	▼	0	▼	
<input type="checkbox"/> filter enable	0	▼	0	▼	
<input type="checkbox"/> filter enable	0	▼	0	▼	
<input type="checkbox"/> filter enable	0	▼	0	▼	

Reset **OK** **Cancel**