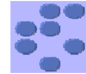

VA1TA TESTING FOR SINGLE EVENT EFFECTS - STATUS

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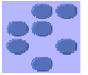
October 23, 2002
SVD Parallel Session, BGM

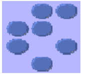
- Set up modifications
- Finally: SEU spots found
- Further steps

Set-up modifications



- New support plate for the hybrid
- Add a diode with a 100 μm diameter slit on the same plate - for laser beam power cross check and focussing
- More software monitoring tools

Focus search - again



Determination of the focus position turned out to be more complicated than we thought before because of the non-linear effects on the chip.

No such problems on the diode with a slit.

Finally, we found the focus on the chip as well, and the two focal plane positions agree very well.

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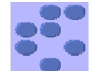
Potential SEU sensitive spots



trim DACs

disable registers

gnd
gnd
vdd
vss
ta
tb
holdb
hold (dummy)
clkin
regin
dreset
dresetb (dummy)
shift_in_b
ck (dummy)
ckb
shift_out_b
read_back
load
AVSS
dgnd
regout
seub
outm
outp
mbias
vthr
vfsf2
vfp
cal
AVDD

global control registers

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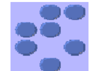
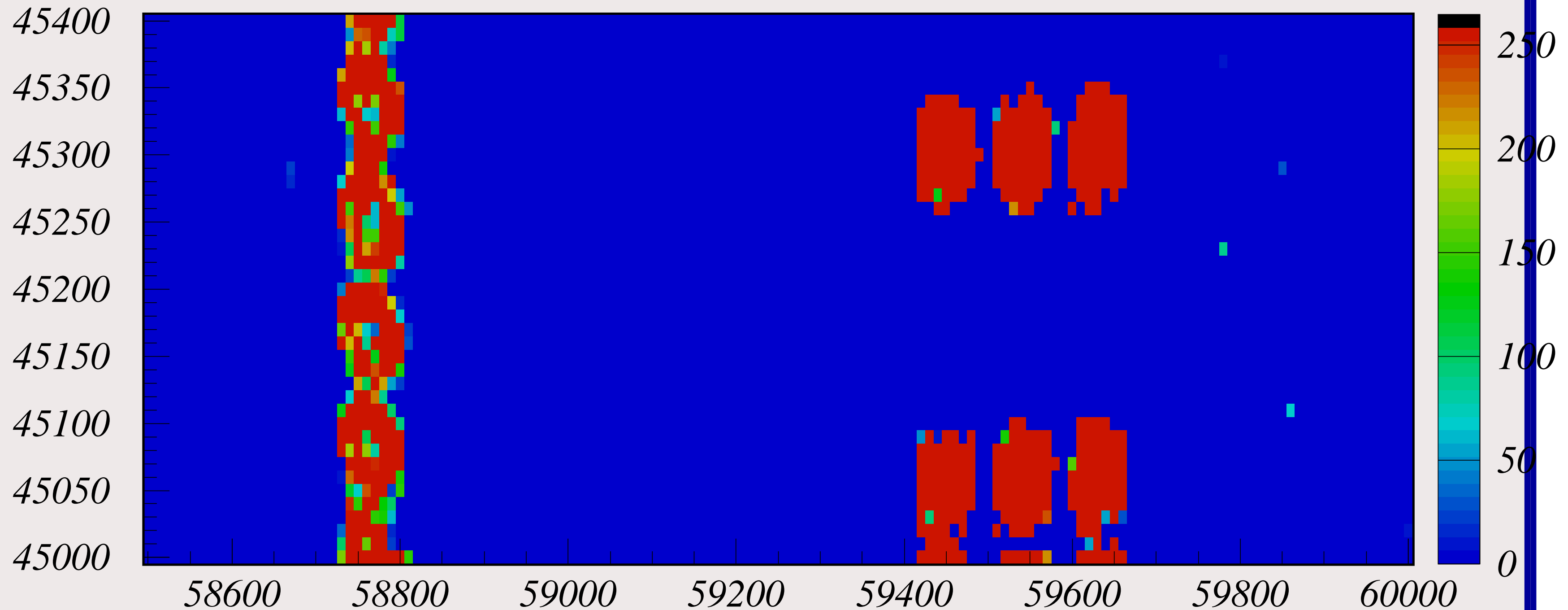
SEU sensitive spots found!

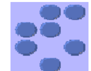


After a considerable increase in laser power per pulse (from about 20 pJ to about 500 pJ) we see clear signs of SEU effects, in well defined regions on the chip.

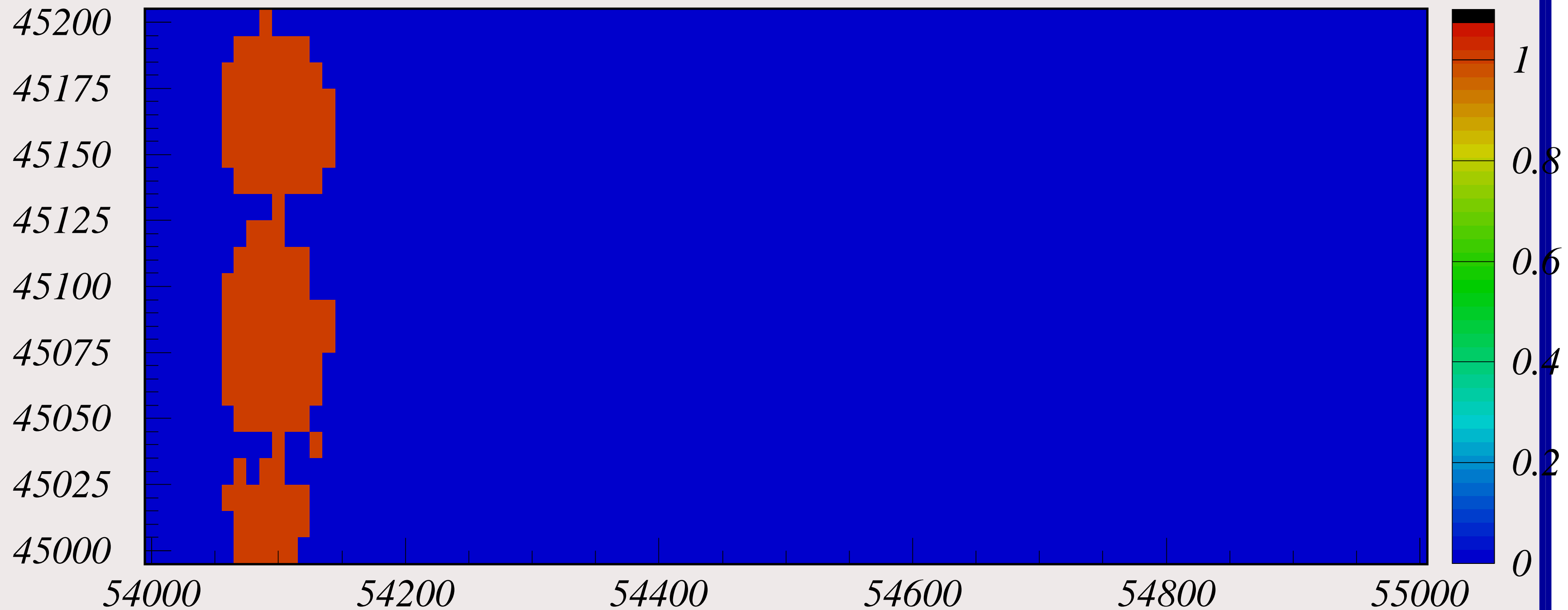


Scan over about 1 mm in x and over 200 μm in y (about 5 read-out channels)

More sensitive spots: shit-out

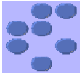


Shift-out signal failure



Scan over about 0.5 mm in x and over 100 μm in y (about 2.5 read-out channels)

Further plans



- Systematic scans, checks of register content after SEU signal is issued
- Threshold pulse power vs position
- Search for shiftout failures
- Test the SEU monitoring scheme for the final read-out
- Report more in depth on the next SVD meeting in two weeks

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