

SUBSTRATE TINNING ANALYSIS

Substrate thinning in a BBI context

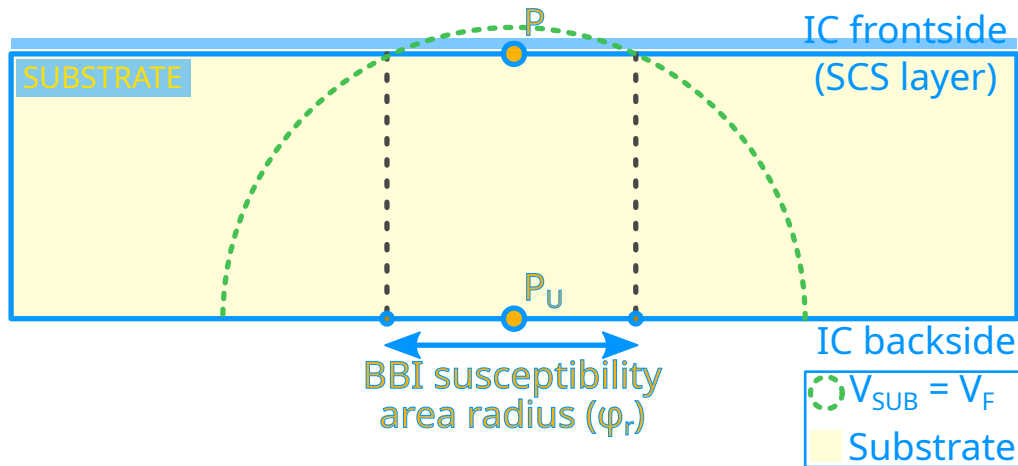
In Laser Fault Injection, substrate thinning has been proven useful
Is it the case concerning BBI?

Section agenda:

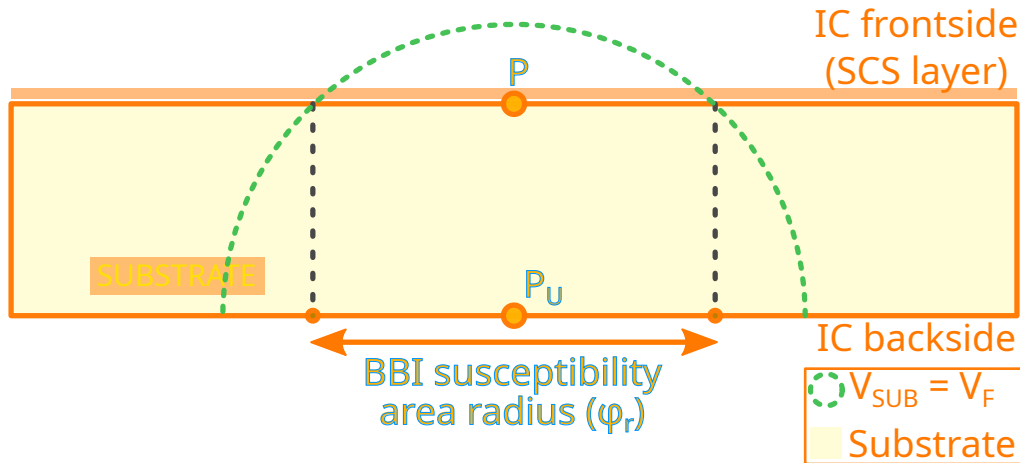
- Geometric approach
- Electrical simulation approach
- Experimental validation

Geometric approach

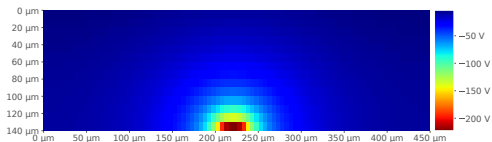
Geometric approach



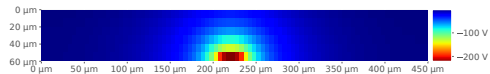
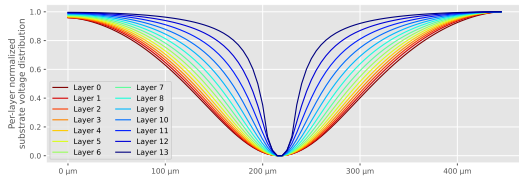
Geometric approach



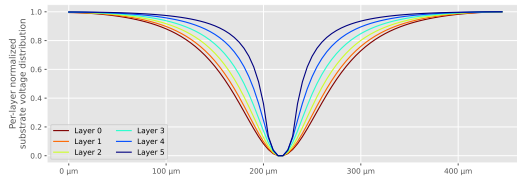
Simulation approach



The higher the layer number, the closer to the probe.
 The lower the normalized value, the higher the concentration.



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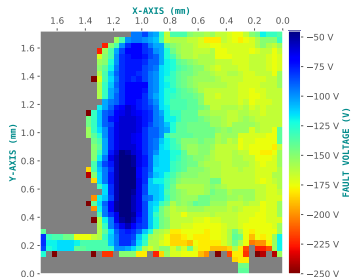
A few words on substrate thinning techniques

AJOUTER IMAGES APPAREILS AMINCISSEMENT ET EXPLICATIONS

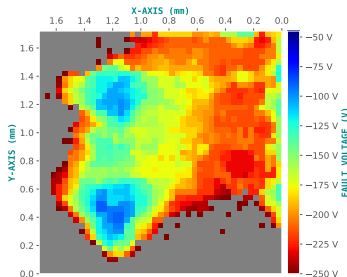
Substrate thinning in practice

Fault susceptibility maps

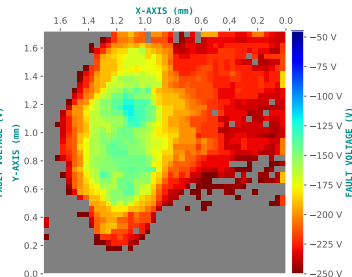
50 μm , 140 μm and 200 μm FSM



50 μm (ST50)
Average fault voltage = -137.5 V



140 μm (ST140)
Average fault voltage = -181.4 V



200 μm (ST200)
Average fault voltage = -203.2 V

Substrate thinning in practice

Susceptibility area spreading

50 μm , 140 μm and 200 μm FSM

