

Backside Device Irradiation for Single Event Upset Tests of Advanced Devices

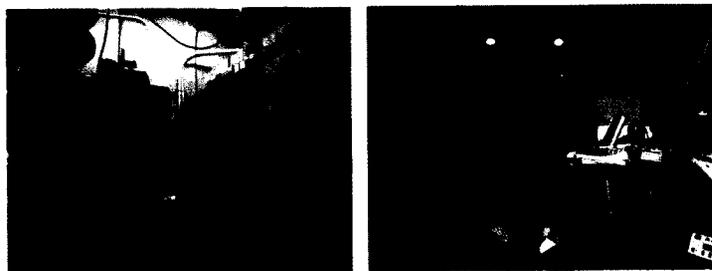
Gary M. Swift
Jet Propulsion Laboratory/
California Institute of Technology

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TALES FROM THE CAVE



DIRECTED BY
GARY M. SWIFT/JPL

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for general support – Allan Johnston

Outline

Background: How and Why?

Review of two “good” examples

SDRAM

PowerPC

Three “bad” examples

“Bad” data

“Bad” beam

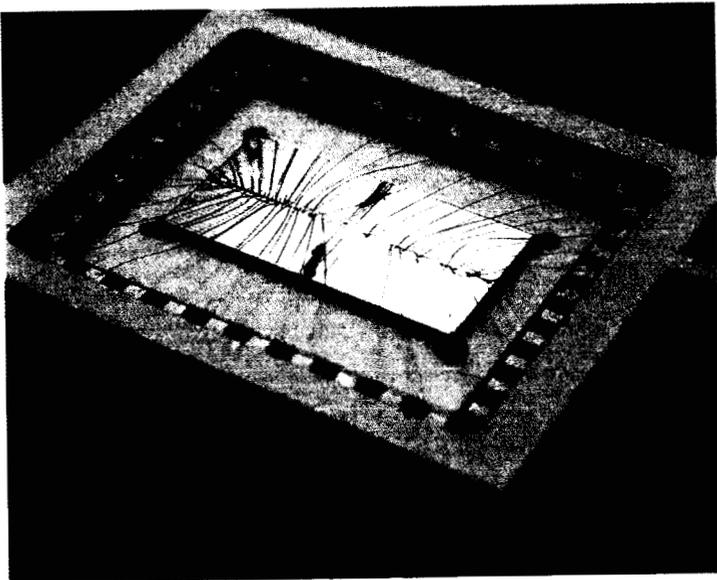
“Bad” procedure

Conclusions

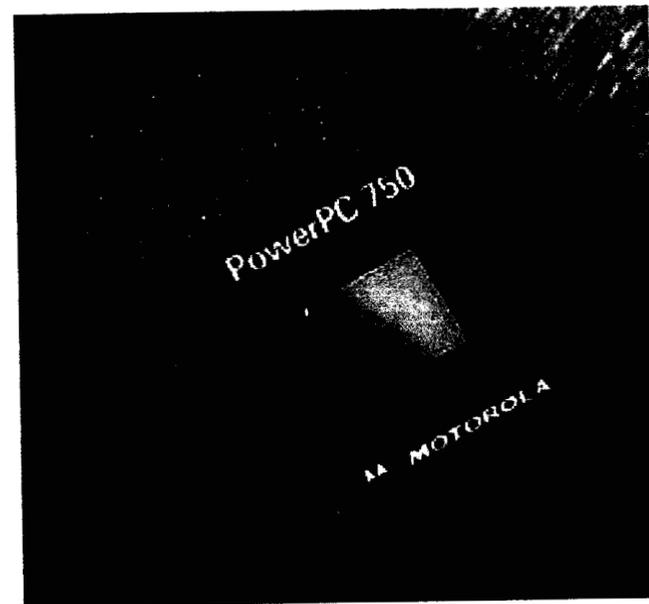
Background: Why?

Two reasons are:

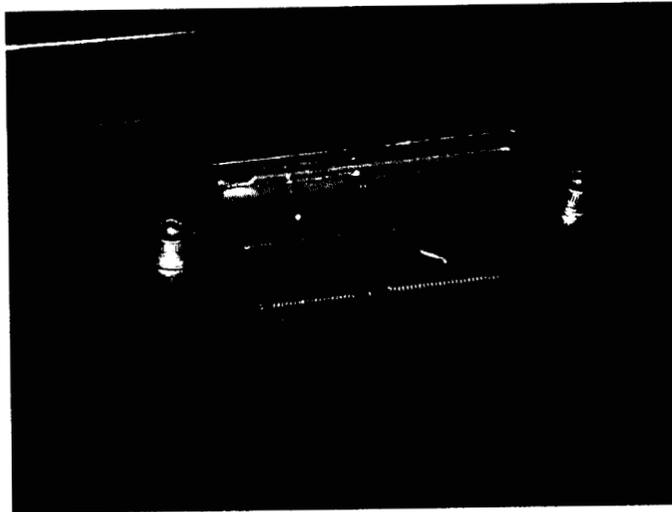
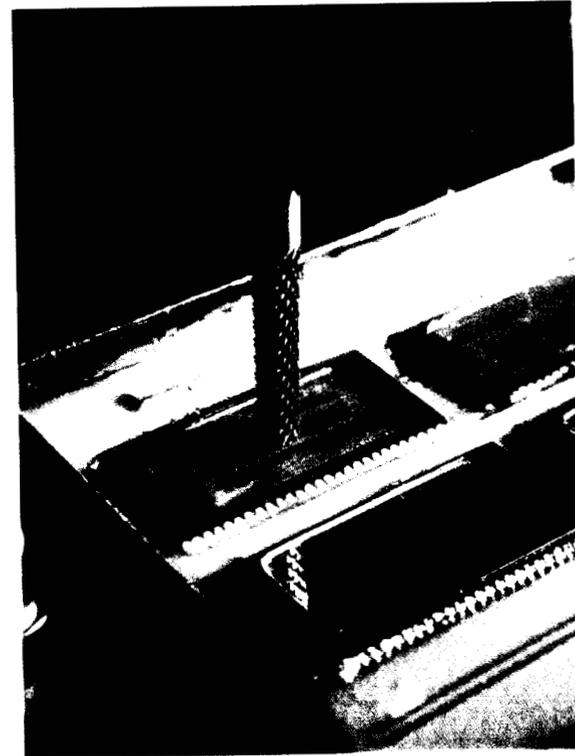
SDRAMs



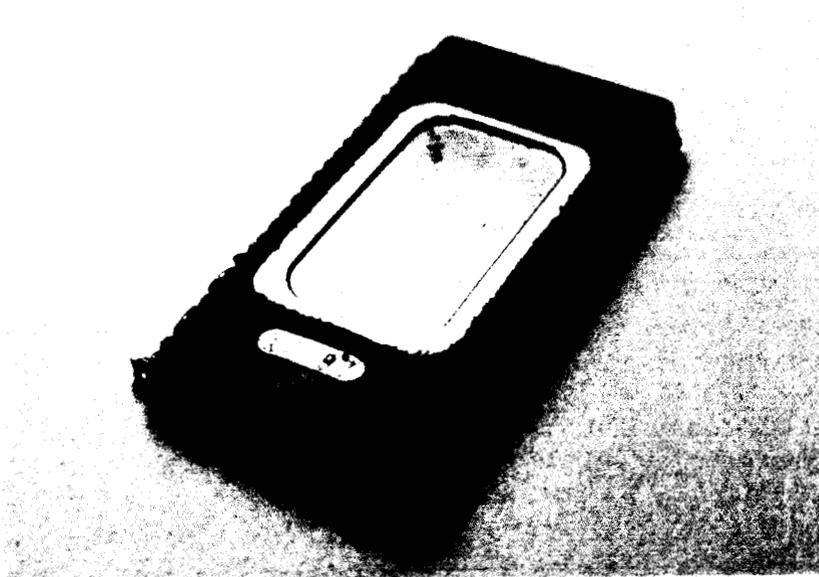
Flip-Chips



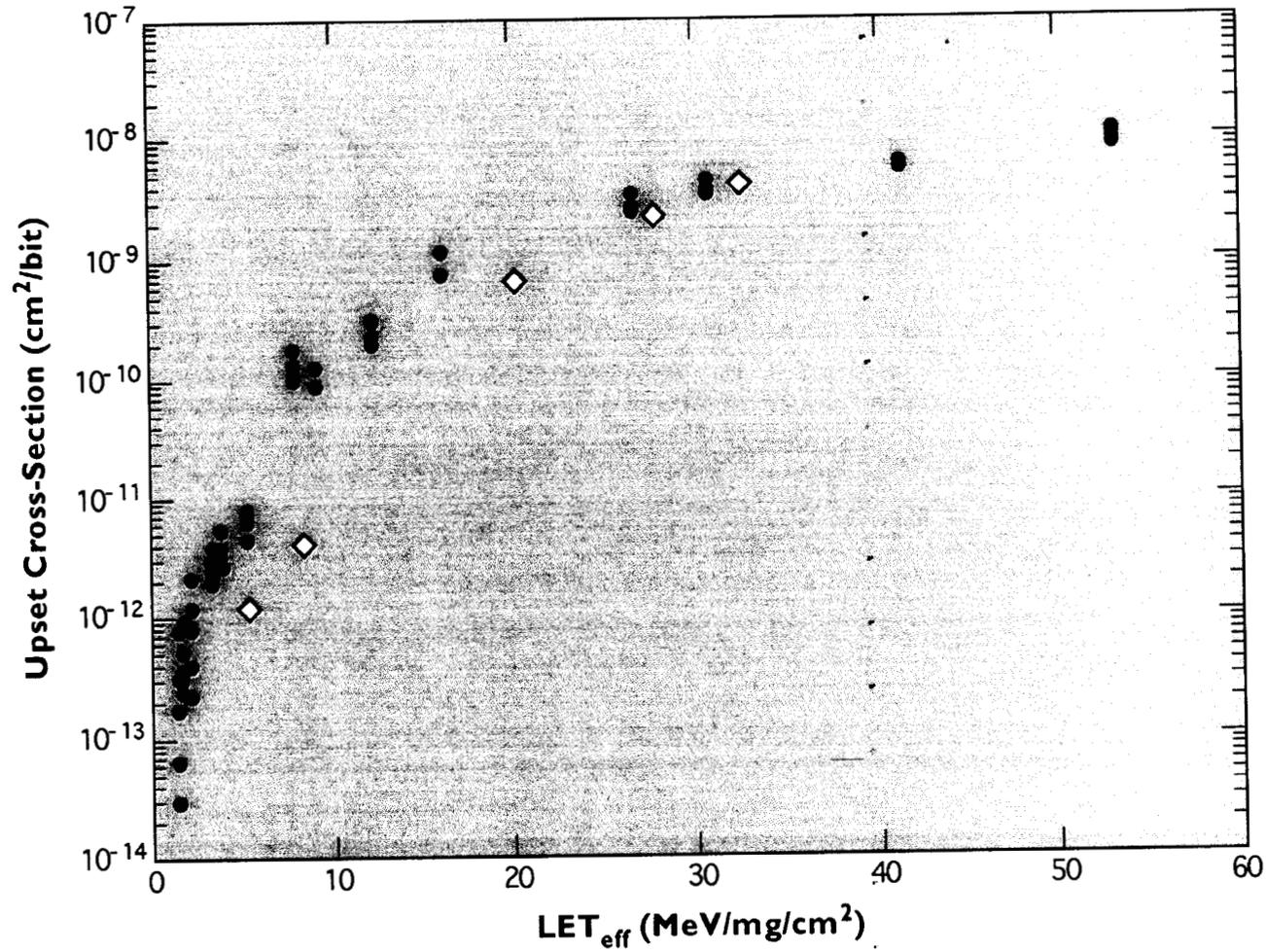
Background: How?



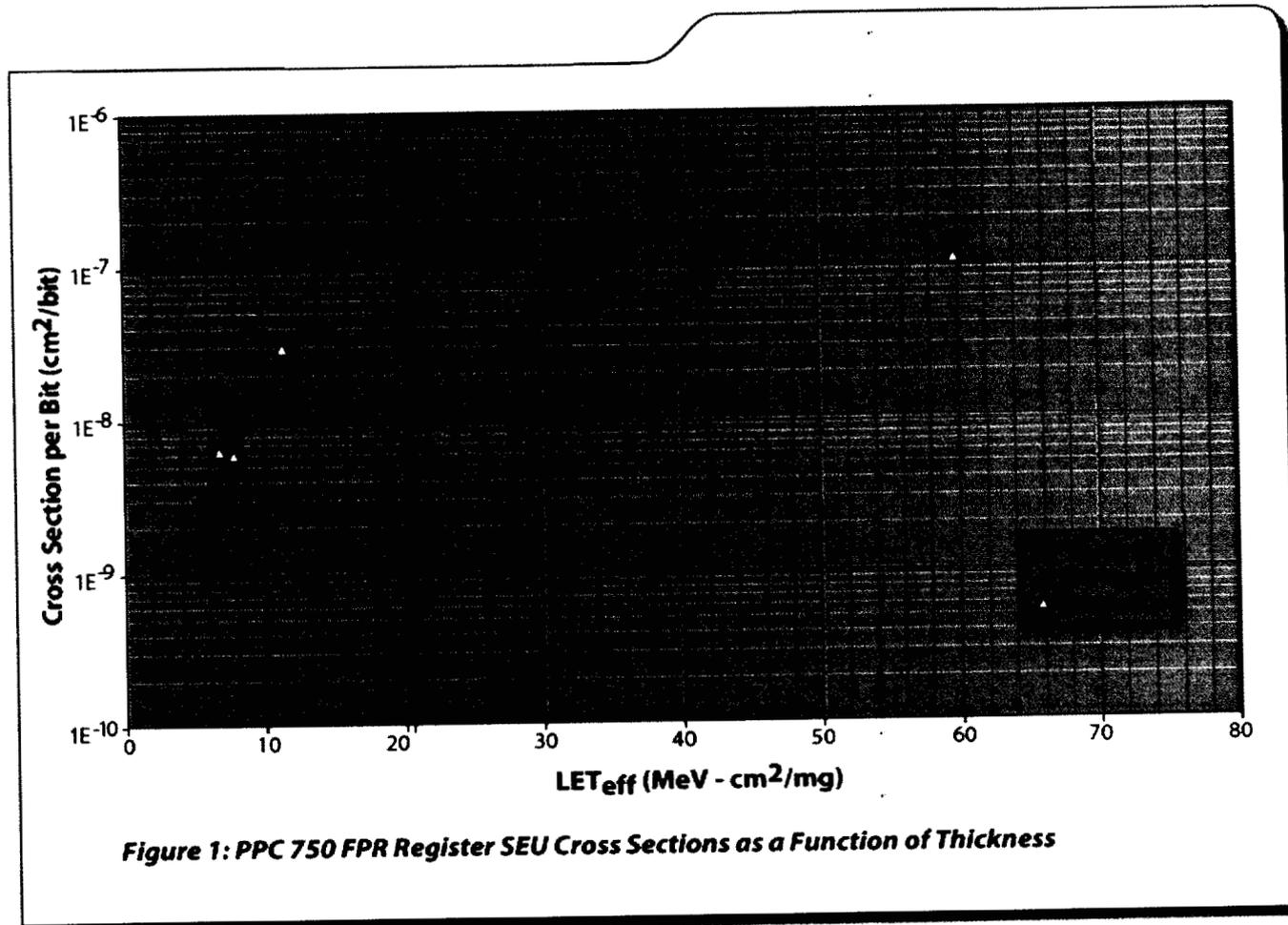
Example results:



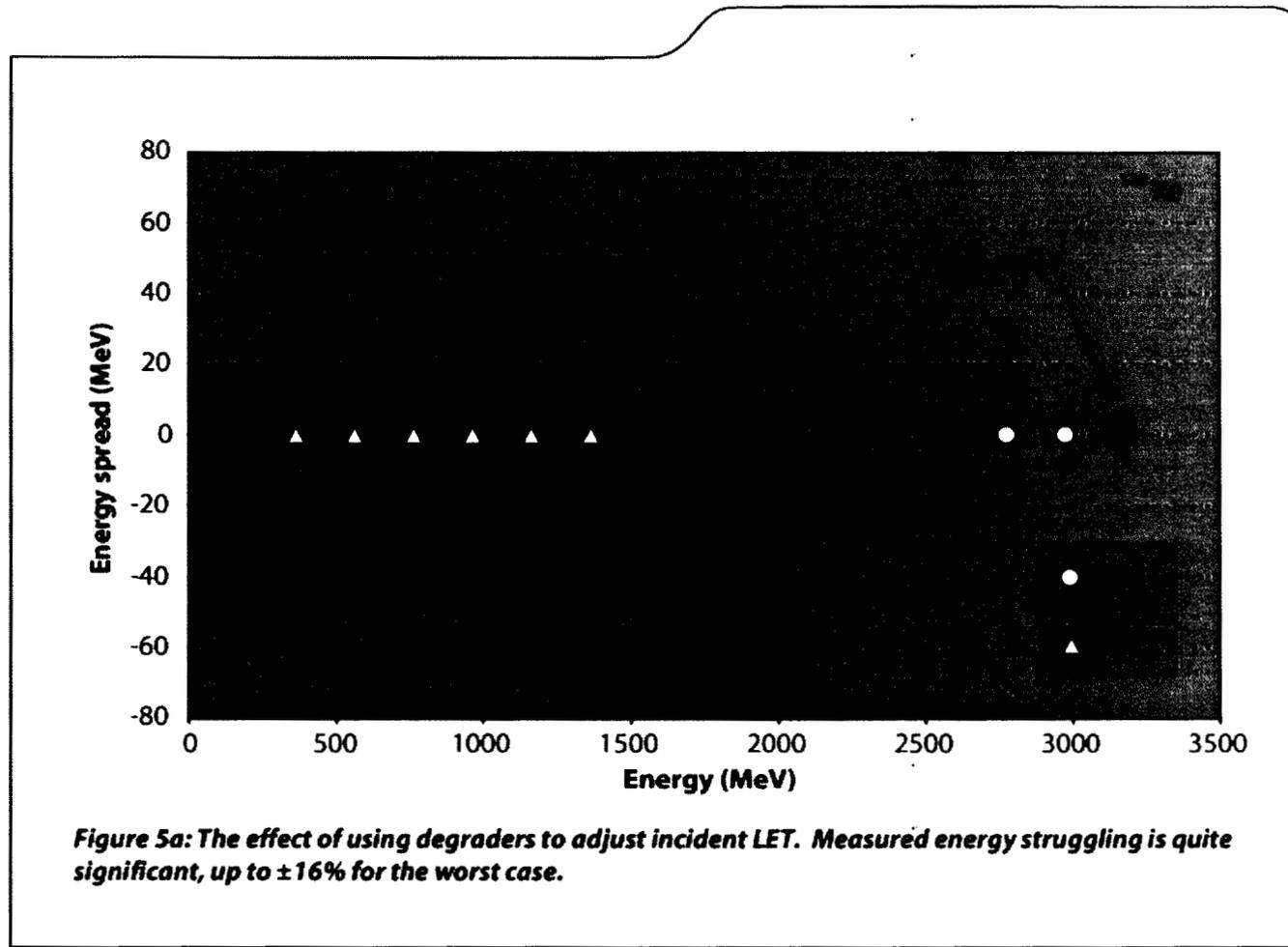
“Good” example: SDRAM



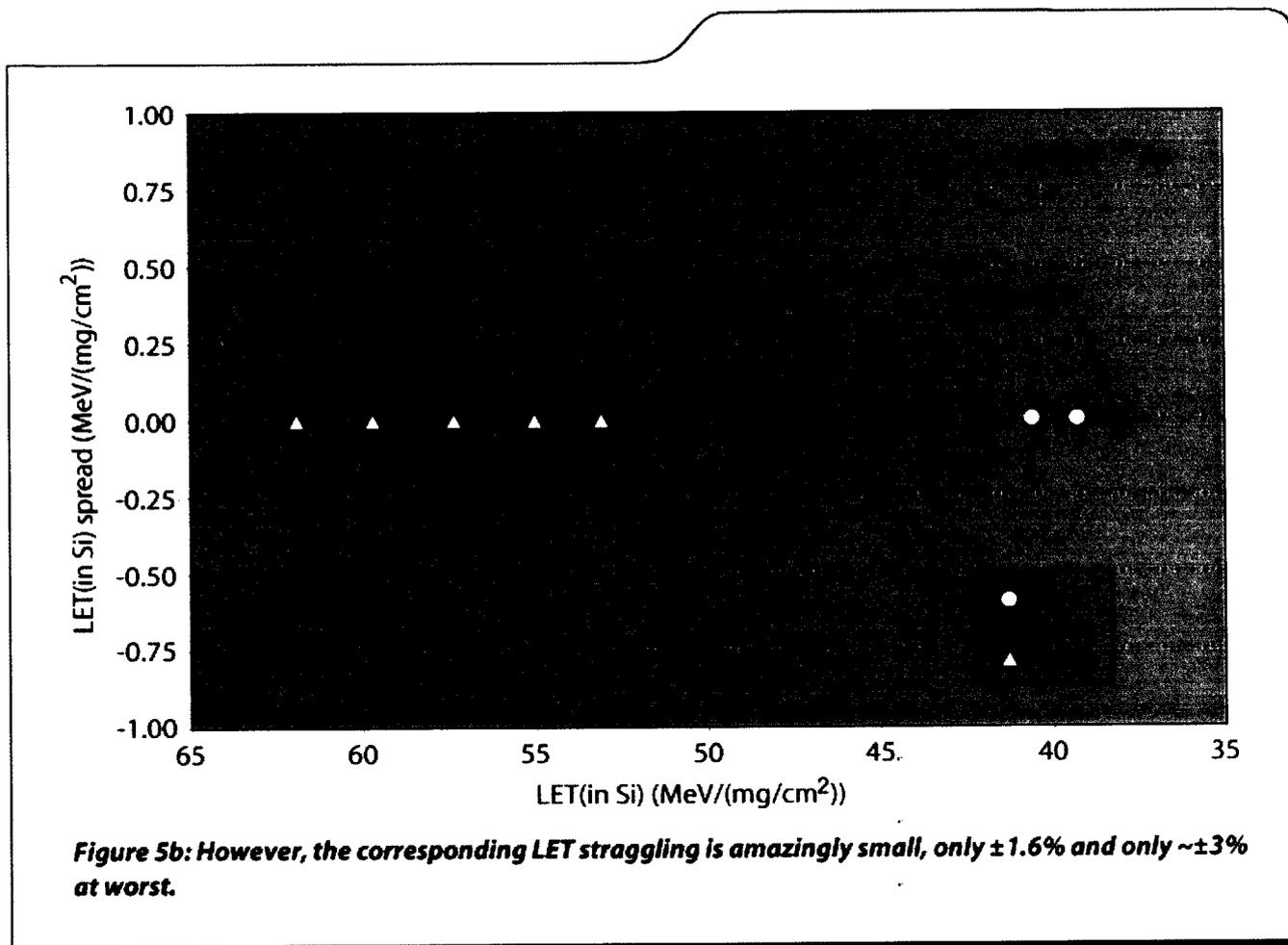
“Good” example: PowerPC



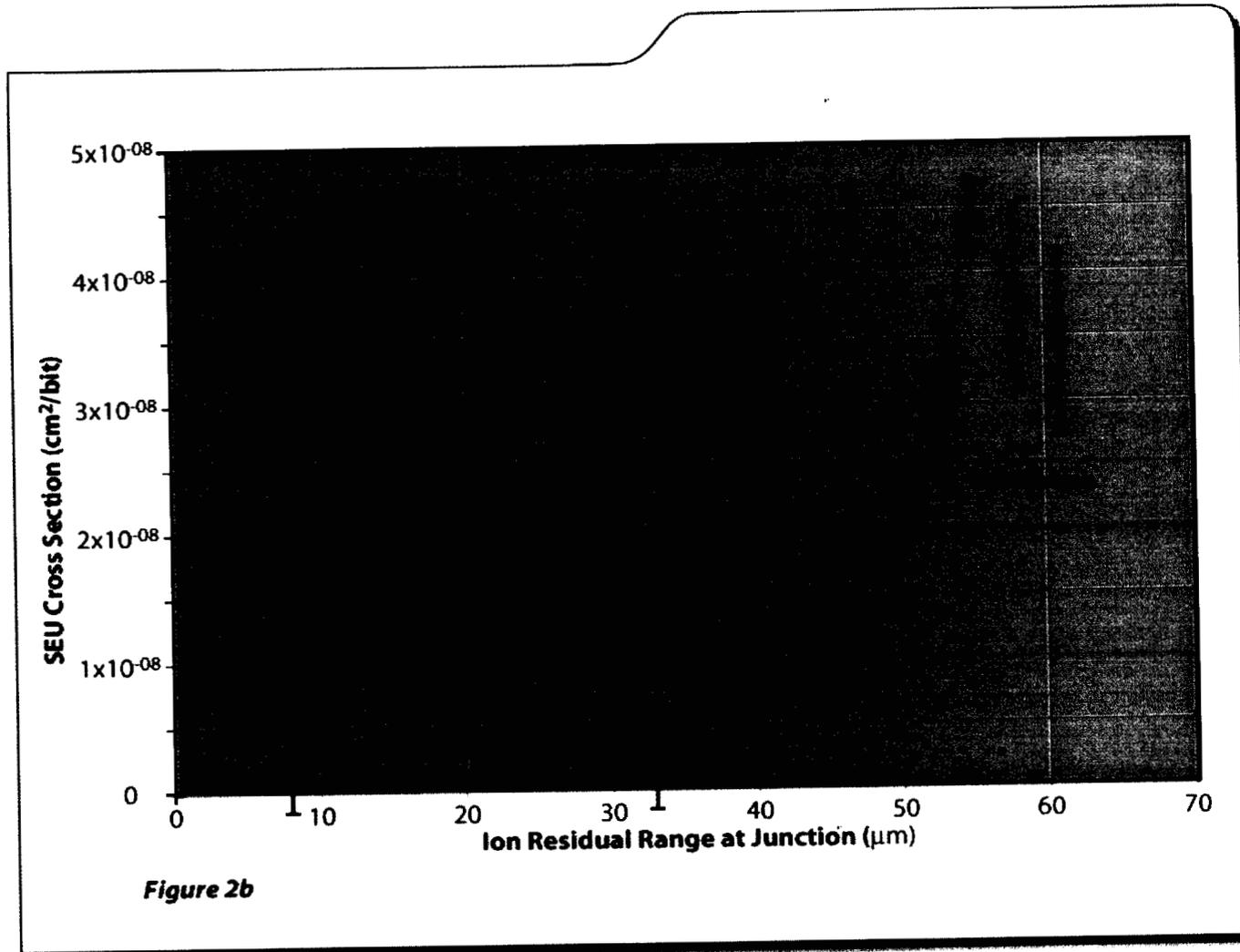
“Bad” Example: “Bad” Data



“Bad” Example: “Bad” Beam



“Bad” Example: “Bad” Procedure



Conclusions

Texas A&M Wishlist:

- Upstream Degradation (for uniformity)
- LET and/or Energy Spectrum Detector

Backside thinning is NOT so easy

- Yield Problems
- Need Long-Range Ions

Backside Irradiation Requires Careful LET Assignments