



COMPAS – Advanced Test Compressor

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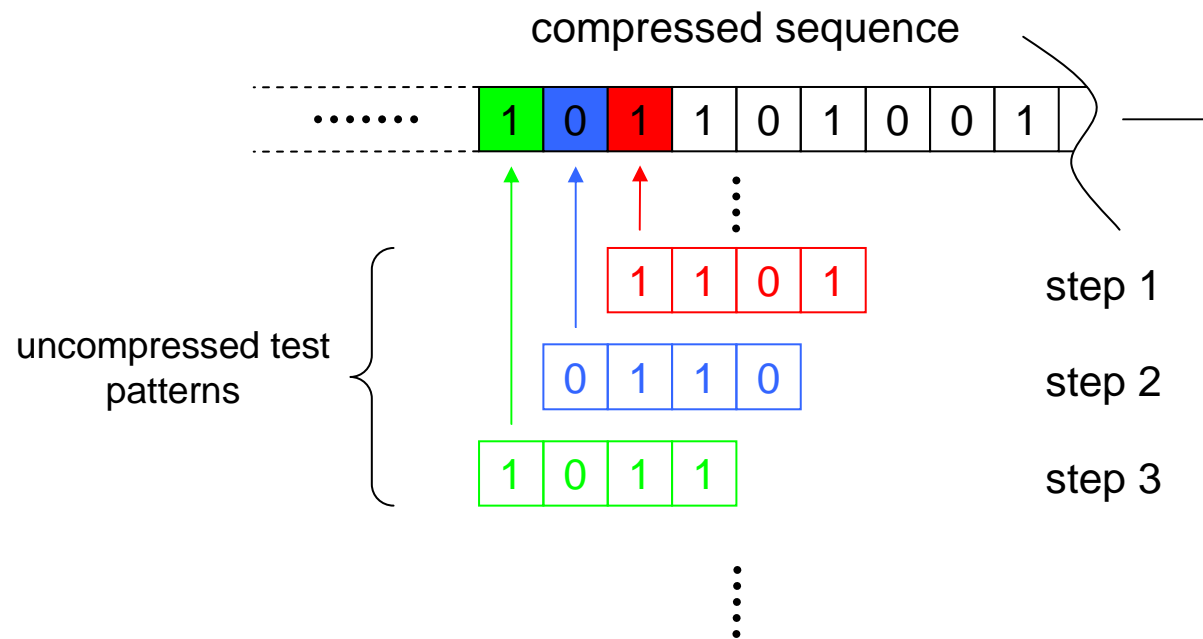
Outline

- Introduction – What is COMPAS?
- COMPAS
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 - Data flow
 - Tested software
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- Results
 - Comparison with generic compressors
 - Comparison with test data compressors
- Conclusion

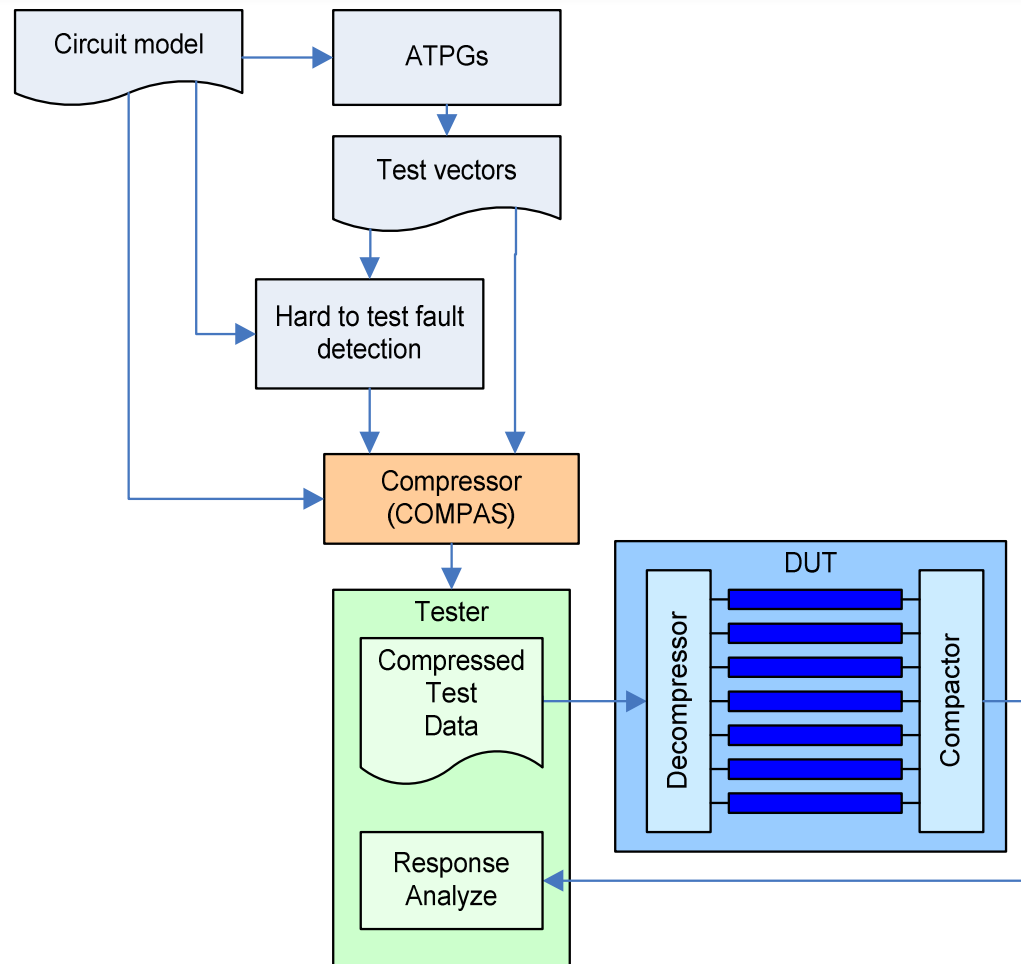
COMPAS

- COMPAS (COMpressed PAttern Sequencer)
 - Test compressor
 - IEEE 1149, IEEE 1500
 - Fault models: stuck-at, IDDQ, delay
 - Various ATPG tools
 - Input data:
 - pairs uncompressed test vector – target ATPG fault
 - 110xxx100xxxxxxx1xxxx101x1 “A1 sa-0”*
 - Output data:
 - compressed modification sequence (no don't cares)*
 - 10111011011101000011101...*
 - *DyRespin decompressor*

Overlapping principle

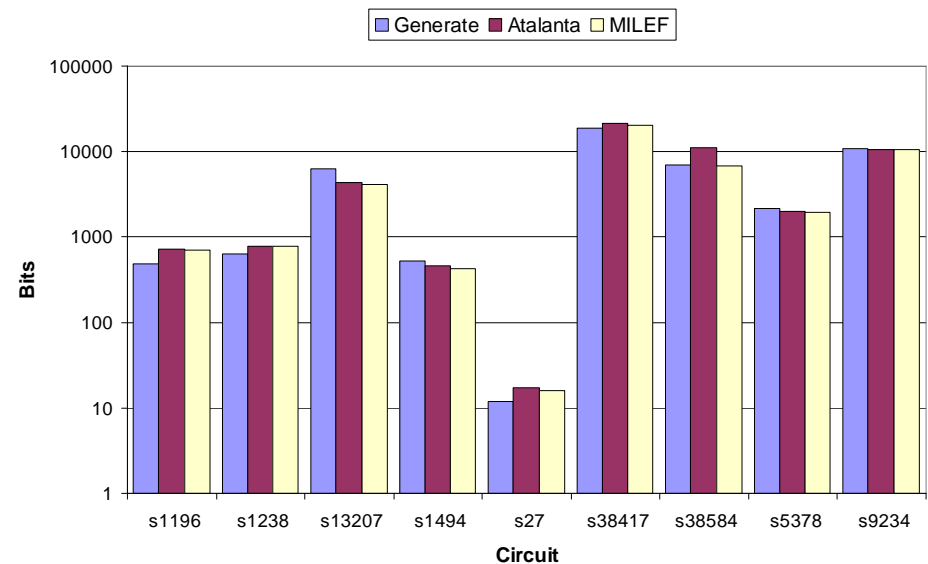


Test data flow

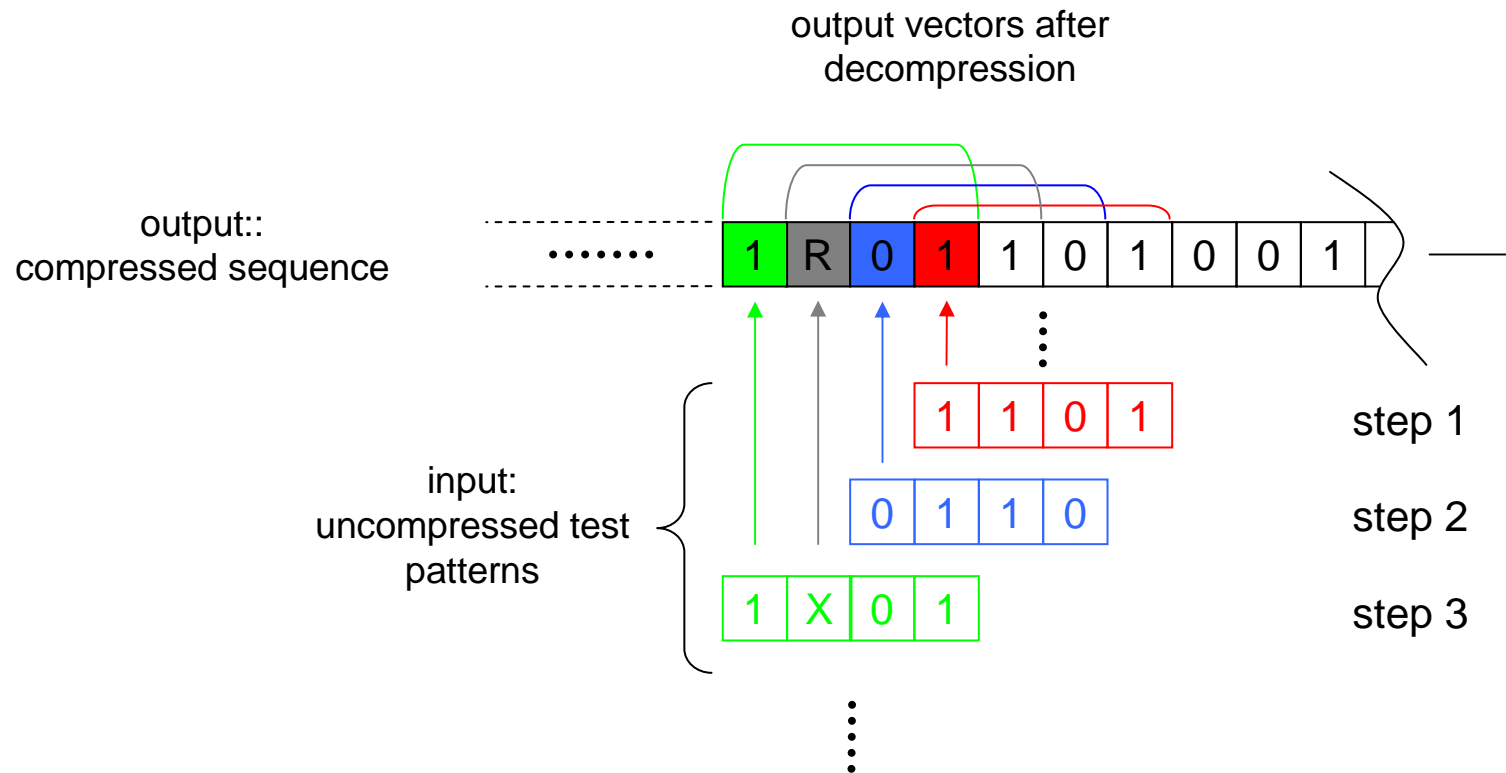


ATPG

- Can use distributed ATPG
- Tested:
 - TetraMAX
 - ATOM
 - Atalanta-M
 - TurboTester Generate
 - MILEF



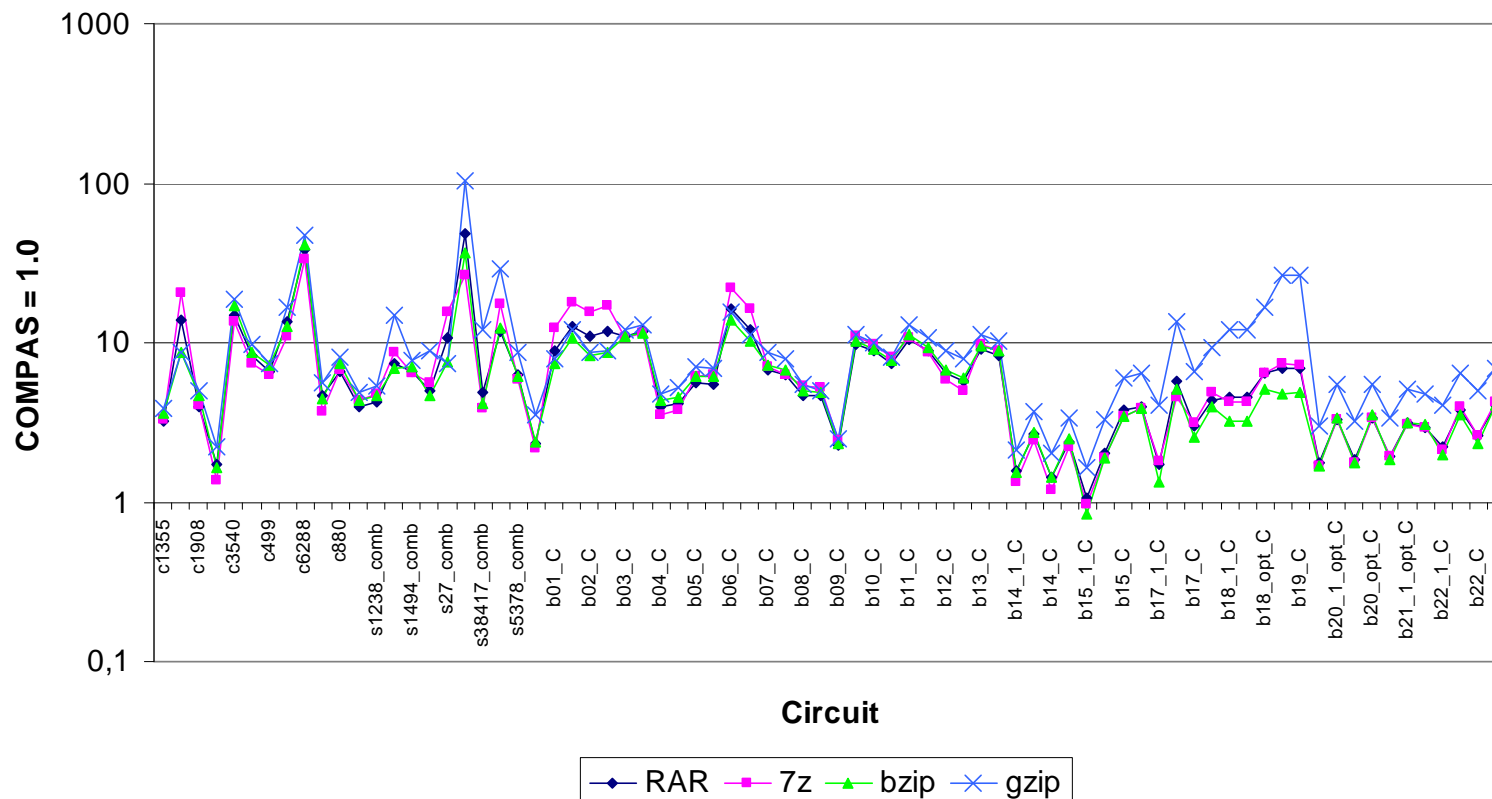
Compression decisions



R – random bit

Comparison with the other algorithms

Compression



Comparison with the other algorithms

Circuit name	MinTest	Stat. Coding	LFSR Reseeding	Illinois Scan	FDR Codes	EDT (Test-Kompress)	RESPIN++	proposed algorithm	
	# of bits	# of bits	# of bits	# of bits	# of bits	# of bits	# of bits	# of bits	CPU time [s]
s13207	163,100	52,741	11,285	109,772	30,880	10,585	26,004	3819	8
s15850	58,656	49,163	12,438	32,758	26,000	9,805	32,226	6930	11
s38417	113,152	172,216	34,767	96,269	93,466	31,458	89,132	19597	177
s38584	161,040	128,046	29,397	96,056	77,812	18,568	63,232	5778	57

COMPAS

- Efficient compressor
 - IEEE 1149, IEEE 1500 compliant
 - Compress data from parallel ATPGs
 - Many ATPGs
 - Usable with various fault models
 - High compression ratio
 - High fault coverage
 - Fast compression
 - Fast and energy saving testing – no random phase

Introduction
COMPAS
Results
Conclusion

Discussion

Thank you for your attention!