

Reconfigurable HPC

Notes on
datastream-based FFT

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derived from: R. Hartenstein:
Reconfigurable Technologies; 23
July 2004, Seminar given at Kyushu
University, Fukuoka, Japan
<http://www.tu-kl.de/~inf/rt/sem2004/kyushu04a1.pdf>
<http://www.tu-kl.de/~inf/rt/sem2004/kyushu04a2.pdf>

application-specific distributed memory*

- Application-specific memory: rapidly growing markets:
 - IP cores
 - Module generators
 - EDA environments
- Optimization of memory bandwidth for application-specific distributed memory

* see Herz et al.: proc. IEEE ICECS 2002

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Multiple Scan Windows

asM auto-sequencing Memory

memory bank
data counter

MoM anti machine
an Xputer architecture

rDPU smart memory interface

asM distributed memory

example: 4x4 scan windows

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16 point CGFFT: mapped onto 2-D memory space

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CGFFT: Nested and Parallel Scan Pattern

MAC

input coeff. temp. coeff. temp. coeff. temp. coeff. output

in_i coeff.
in_{i+1} empty

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CGFFT: Parallel Scan Pattern Animation

MAC

out_j
out_k

in_i coeff.
in_{i+1} empty

32 steps

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