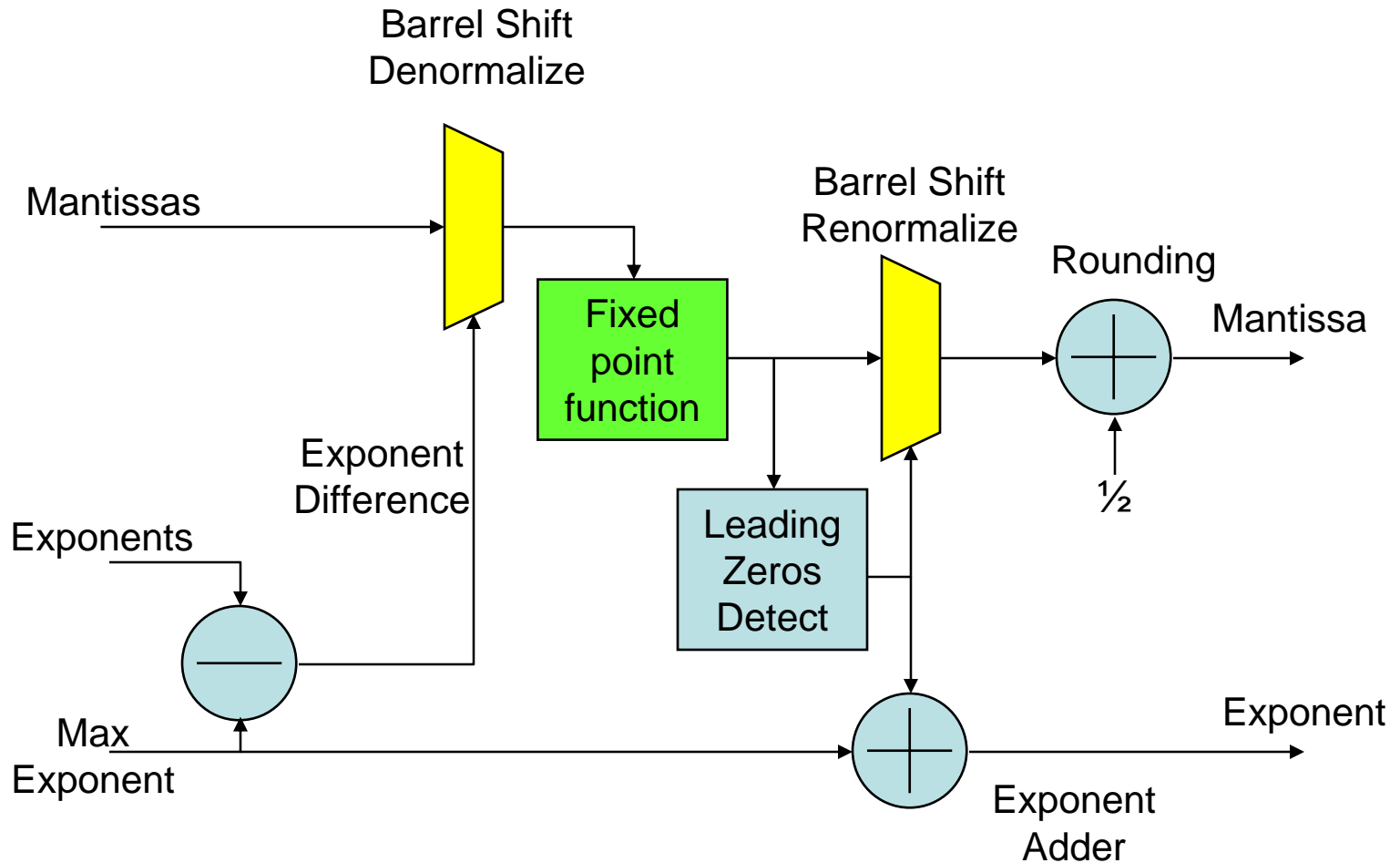

Hybrid Floating point Technique yields 1.2 Giga-sample per second 32 to 2048 point floating point FFT in a single FPGA

HPEC 2006
Poster Session B.4
20 September 2006

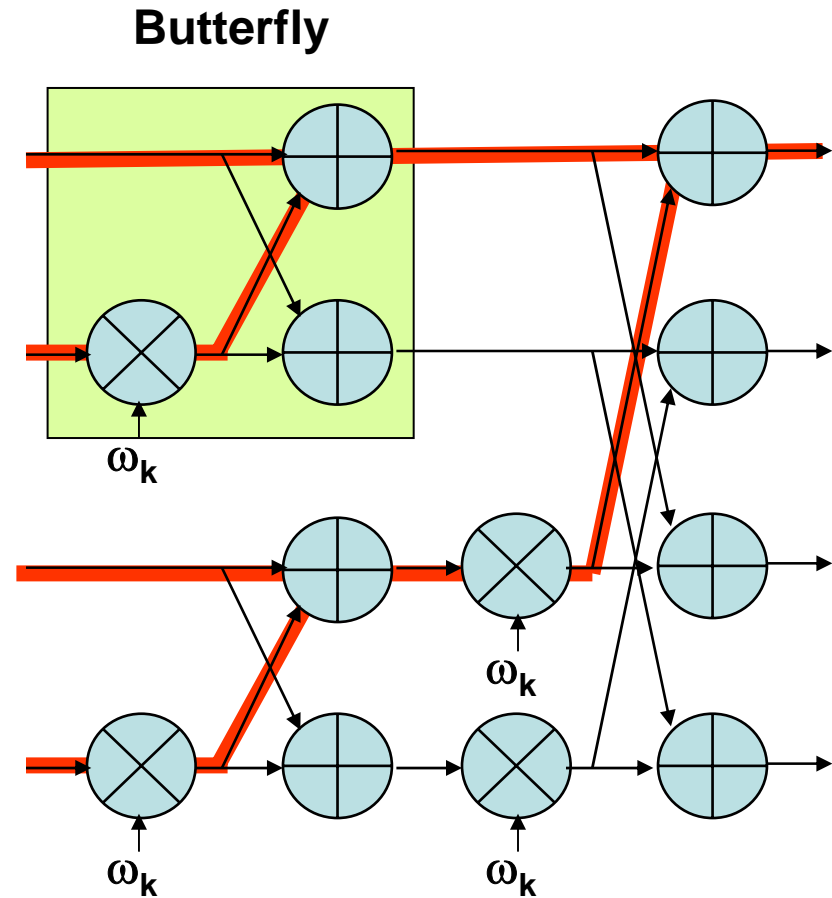
Ray Andraka, P.E.
President, Andraka Consulting Group, Inc
ray@andraka.com

Apply floating point to larger functions



FFT output is only as precise as largest input

- **Cascade of butterfly elements**
- **Each output is essentially an adder tree with phase rotators**
 - Rotators don't change scale
 - Inputs right shifted to match scale of largest input
 - intermediate renormalizing not effective
 - Term from every FFT input
- **1 bit growth per stage**
 - Renormalize maintains width
 - Alternative: grow word width
- **Similar effect in other FFTs**
 - Winograd, Sande-Tukey, Singleton etc.)



1.2 GSample/sec IEEE floating point FFT

