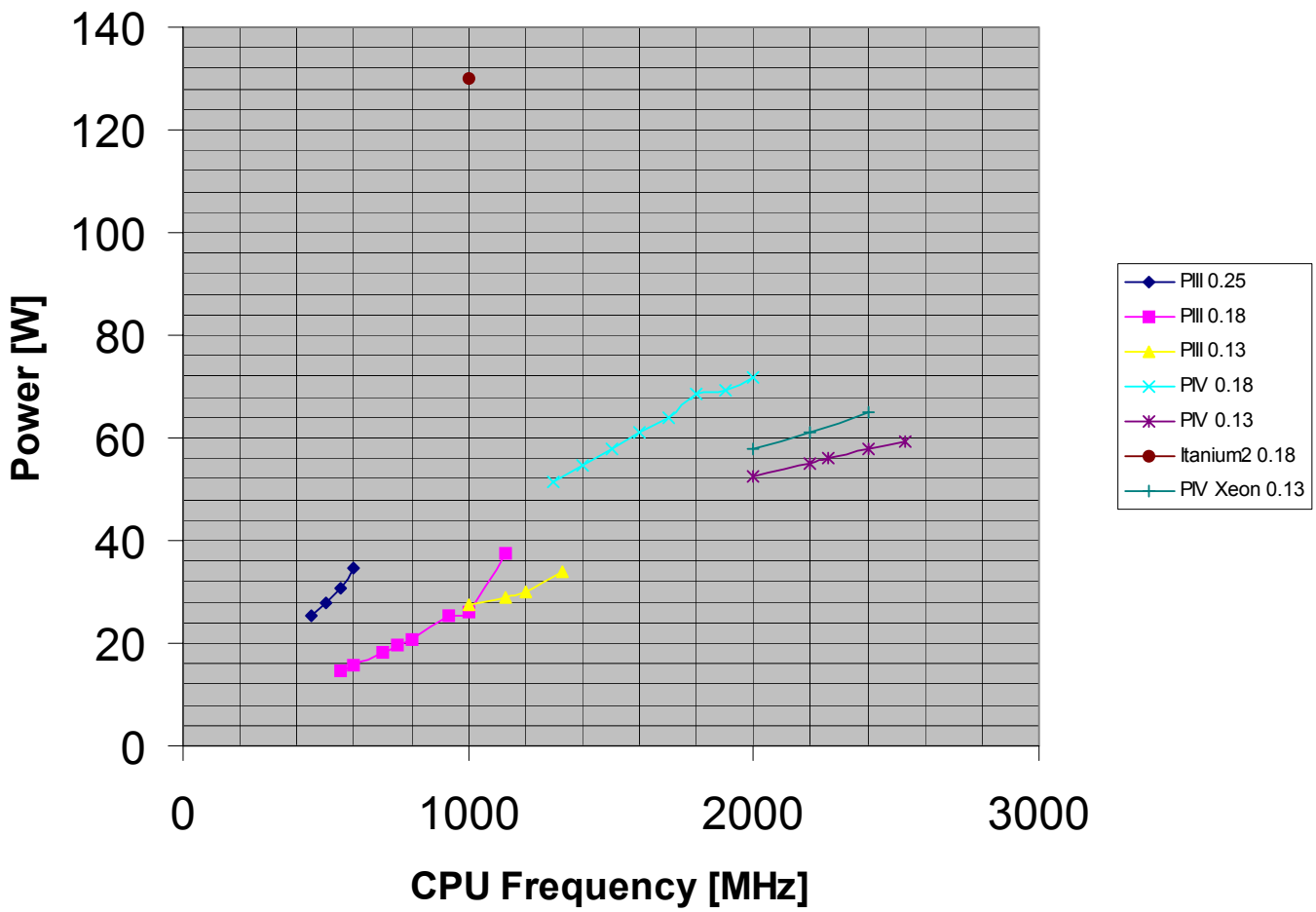


# PC power consumption

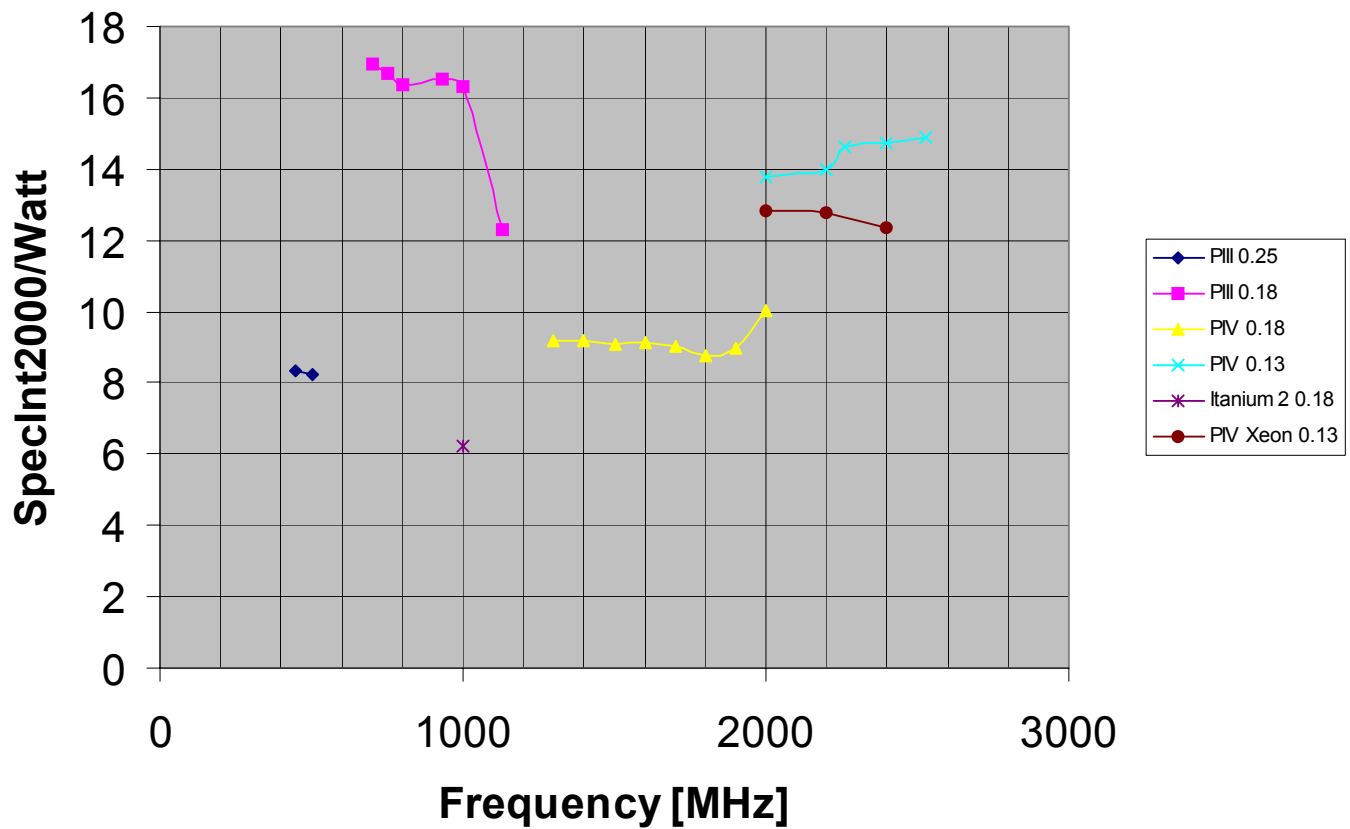
Bernd Panzer-Steindel, CERN/IT/ADC  
30.07.2002

- Power supply efficiency is about 70 % == 70 W effective power needs 100 W input power
- Mainboard + power supply + harddisk under load consume on a dual cpu board (PIII 1 GHz) up to 100 W more (variation of up to 30 % depended on the motherboard and power supply)
- The latest dual cpu Itanium 2 box from HP requires about 700 Watts of input power
- Ratio of SpecInt95 versus SpecInt2000 is about 0.1 1 SpecInt95 = 10 SpecInt2000
- Disk power consumption is about 10 W at idle time and 30 W at startup (120 GB EIDE disk)
- Estimated needs for LHC computing in 2007 is 2.3 million SpecInt95 and 3100 TB
  - at a ratio of 10 SpecInt2000 / Watt == 2.3 MW power for the CPU server
  - with 1 TB disks at 30 W == 0.1 MW
  - but scaling not yet really checked current GB/W curve
- PIII Northwood (0.18 um) 256 KB L2 == 28 million transistors
- PIII Willamette (0.13 um) 256 KB L2 == 28 million transistors
- PIV (0.18 um) 256 KB L2 == 42 million transistors
- PIV (0.13 um) 512 KB L2 == 55 million transistors
- Itanium 2 Mcinley (0.18 um) 256 KB L2 + 3 MB L3 == 220 million transistors
- Itanium 2 Maddison (0.13 um) 256 KB L2 + 6 MB L3 == 500 million transistors (L3 on chip !) → power

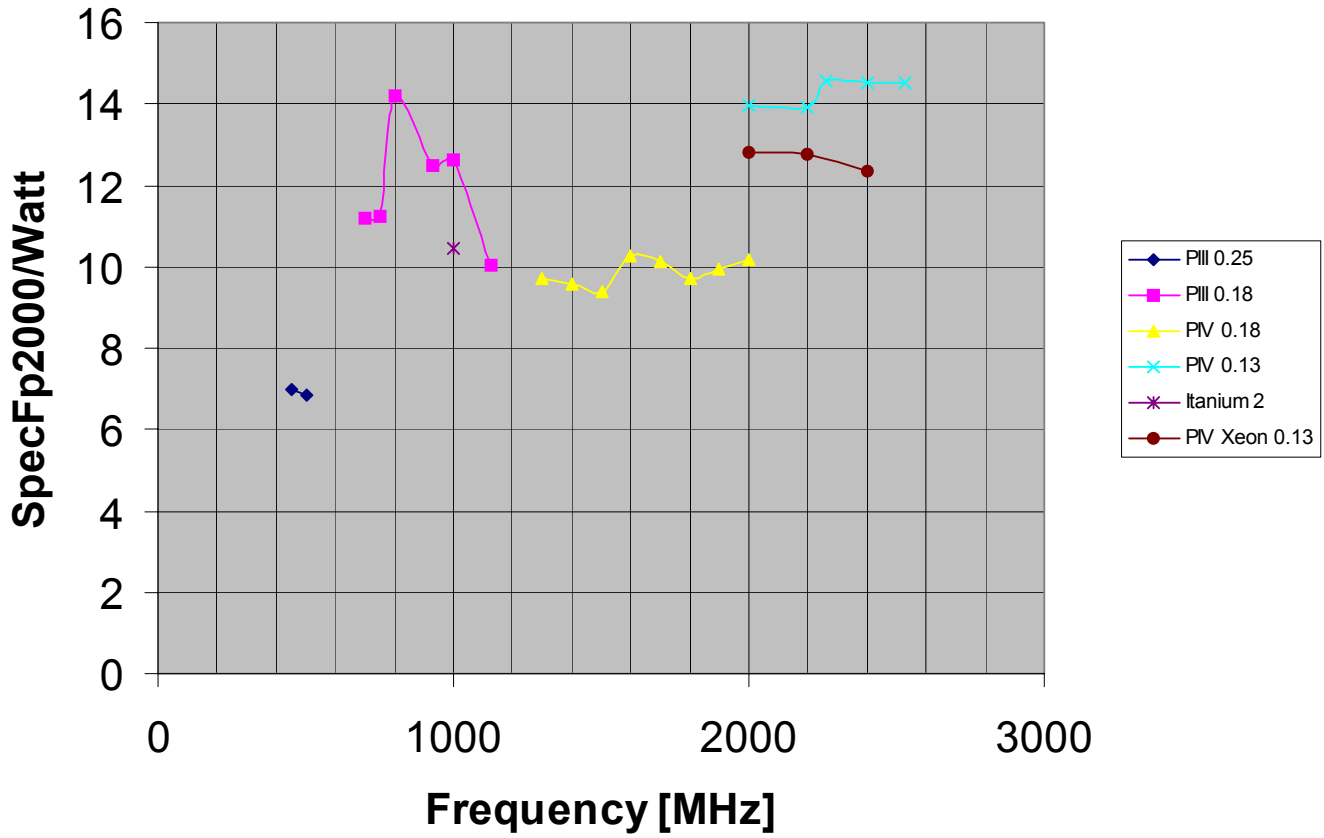
## Power consumption of different processors



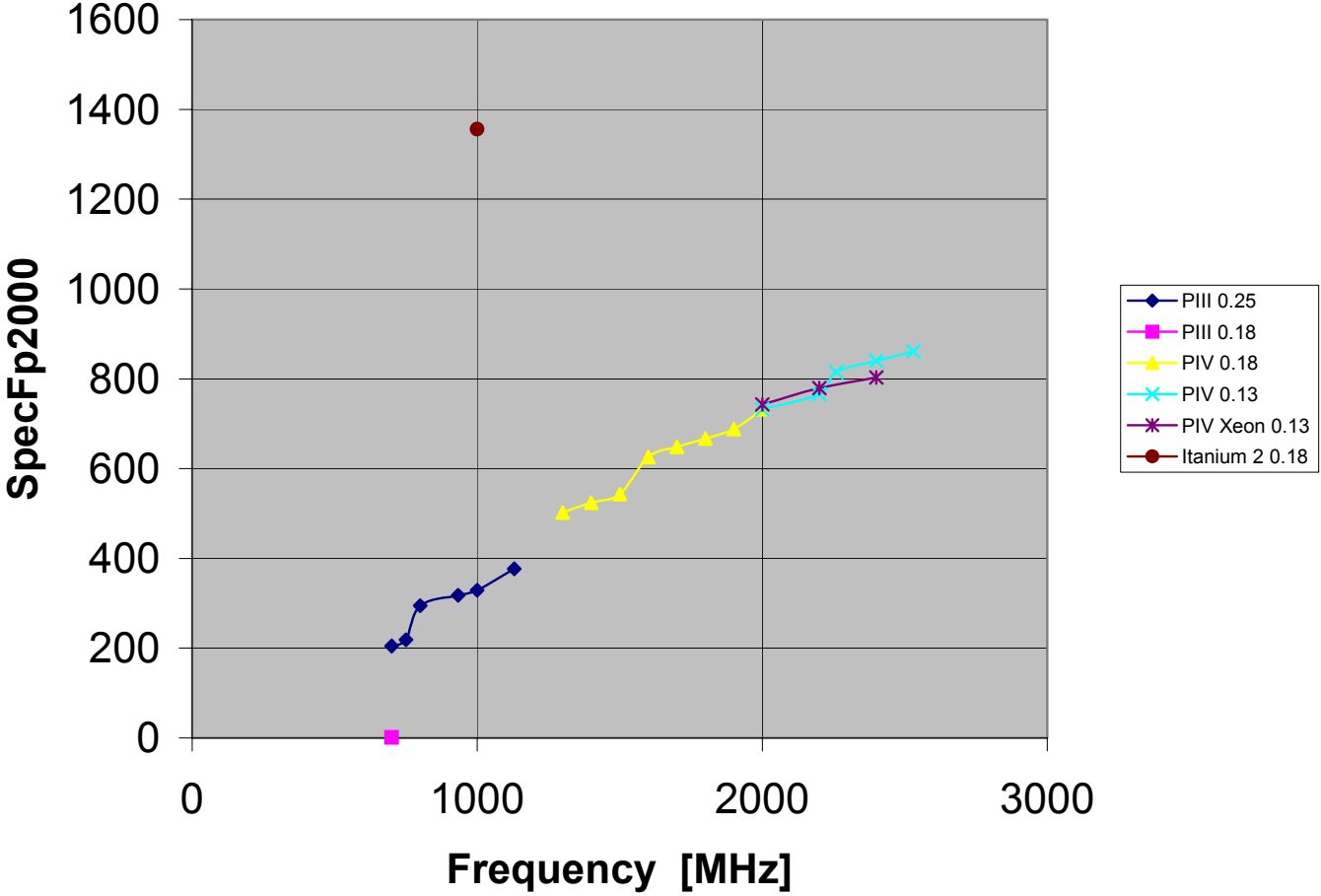
## Processor performance (SpecInt2000) per Watt



# Processor performance(SpecFp2000) per Watt



# SpecFp2000 for different processors



## SpecInt2000 for different processors

