

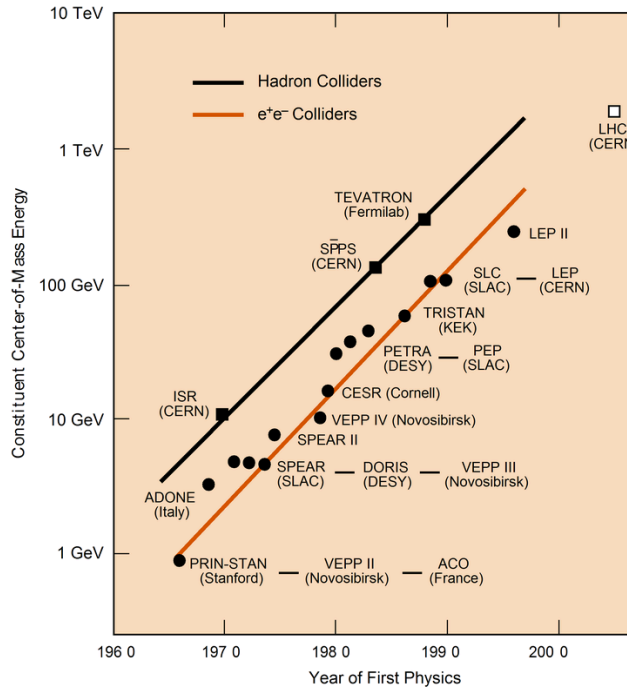


University of  
HUDDERSFIELD  
Inspiring tomorrow's professionals

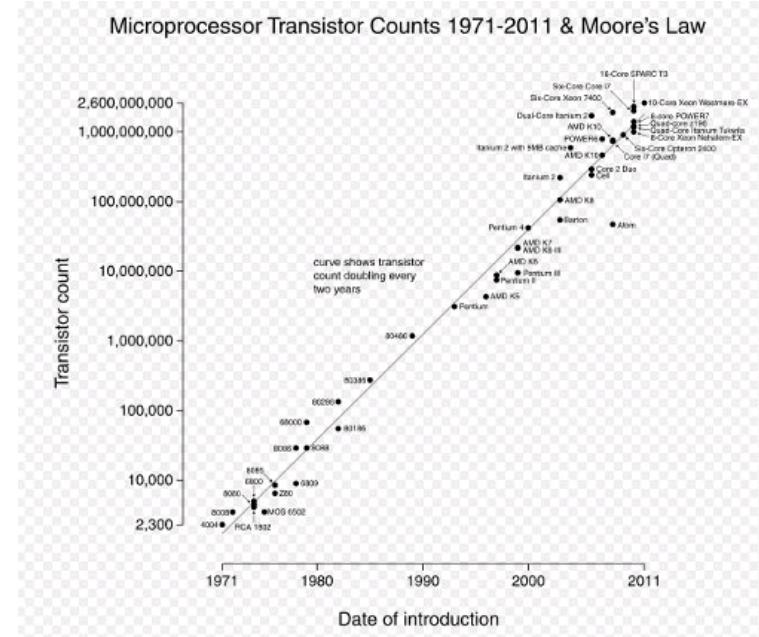
# Workshop on Advanced Computing for Accelerators Day 2

Roger Barlow

# Computers get faster



Livingston Plot



Moore's Law



# So?

Most of us spend most of our time with computers

- We can do calculations more quickly
- We can do different calculations
- We can use calculations in a different way
- These can change our whole approach to the way we plan and work

Provided we are prepared to learn to use new tools, not just stick with familiar desktops and laptops.



# Different 'Parallel' Architectures

Many Cores  
Not connected  
(Condor)

Many Cores  
linked  
(Beowulf)

Many Cores  
On 1 chip  
(MIC)

Many specially  
configured  
Cores  
(GPU)

## Different Problems

Independent  
identical  
particles/cells

Independent  
different  
particles/cells

Connected  
particles/cells

Dependent  
steps

## Need to match...



# Day 1: What we can do now

Existing packages GENESIS and VSIM (formerly VORPAL) implemented on Hartree HPC cluster

(Also GPT available: ELEGANT available soon)

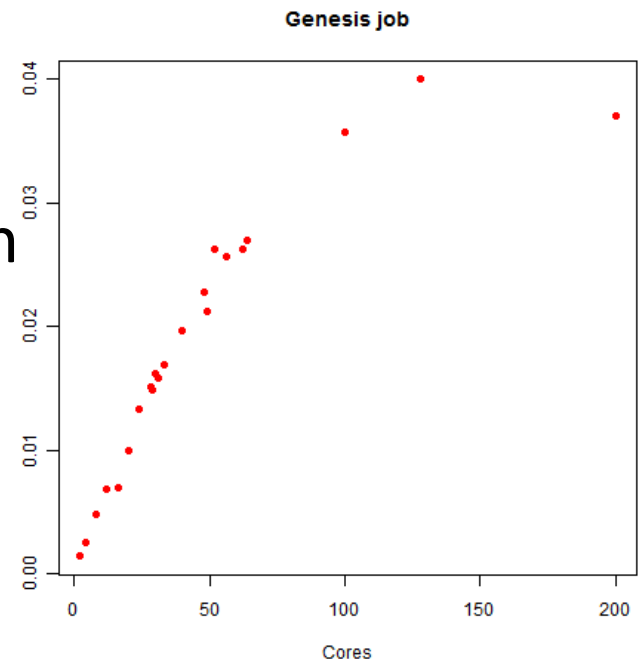
Thanks to David, Jonny, Bas and Peter, and to support from Rob and other Hartree centre people.

First use of training centre.

~45 people have now used HPC

Graph shows speed up I obtained on GENESIS job from using many cores

Impressive to get 2400 CPU sec job back in < 1 minute





# Day 2: Learning from others

- Wide range of different HPC systems and techniques
- Wide range of people and problems
- What they've done maybe interesting directly – or by analogy
- The experiences of early explorers inspire other program authors to follow