Foundations of Theoretical and Computational Science

30th Chris Engelbrecht Summer School (NITheP)

9th CHPC Introductory Programming School

26 January - 06 February 2019

Premier Resort Sani Pass, Drakensberg

Draft Programme



Time	Friday 25 January	Saturday 26 January	Sunday 27 January
9:00-10:30	Arrival of delegates	Welcome and Opening Introduction To CHPC: Dr Daniel Moeketsi (CHPC) Introduction to Shell: Dr Krishna Govender (CHPC)	Linux file system in depth; Regular expressions: sed, grep and find
10:30-11:00		Tea Break	
11:00-12:30		Running commands and getting help	Introduction to bash scripting
12:30 - 14:00		Lunch break	
14:00-15:30		Standard I/O Pipes and Filters; Loops and Scripts	Advanced bash scripting
15:30-16:00		Tea Break	
16:00-17:30		Linux Text Editors; Manual Pages	Advanced bash scripting and exercises

Time	Monday 28 January	Tuesday 29 January	Wednesday 30 January	Thursday 31 January	Friday 1 February
9:00-10:30	Welcome and Introduction	Anna Scaife (1) The Square Kilometre Array and its science	Neil Turok Overview of cosmology and recent progress on quantum mechanical aspects (3)	Anna Scaife (3) Real time classification at SKA-scale for time domain astrophysics	Anna Scaife (4) Data-centric machine learning for SKA post-processing
10:30-11:00	Tea Break				
11:00-12:30	Neil Turok Overview of cosmology and recent progress on quantum mechanical aspects (1)	Neil Turok Overview of cosmology and recent progress on quantum mechanical aspects (2)	Anna Scaife (2) Indirect imaging in the SKA era	Maria Schuld Introduction to Machine Learning	Artur Ekert Quantum Computing (1)
12:30-14:00	Lunch Break				
14:00-15:30	Basic Python Syntax Dr Andrew Gill (CHPC)	Python Basics	Anna Scaife Tutorial 1	Anna Scaife Tutorial 2	Tutorial ML
15:30-16:00	Tea Break				
16:00-18:00	Python Basics and Practical Exercise 1	Python Basics and Practical Exercise 2	Data Processing and Visualization with Python (1)	Data Processing and Visualization with Python (2) Exercise 3	Advanced Matplotlib (1)
18:00 - 19:00	Free Time				
19:00 - 20:00	Dinner				

Time	Saturday 2 February	Sunday 3 February	Monday 4 February	Tuesday 5 February	Wednesday 6 February
9:00-10:30	Artur Ekert Quantum Computing (2)	Free	Artur Ekert Quantum Computing (3)	Johann Rohwer Computational Systems Biology (2) Energetics and enzyme kinetics of biological reactions (2)	Johann Rohwer Computational Systems Biology (3): Metabolic control analysis and simulation of pathways (3)
10:30-11:00	Tea Break				
11:00-12:30	F. Petruccione Programming Quantum Computers	Free	Johann Rohwer Computational Systems Biology (1) The kinetic model of a system of coupled reactions	Johann Rohwer Tutorial Computational Systems Biology	Closing
12:30-14:00	Lunch Break				
14:00-15:30	Maria Schuld Tutorial Quantum Computing (1)	Free	Tutorial Quantum Computing (2)	Mathematical Operations with Numpy and scipy (2)	Summer School ends Departure of delegates
15:30-16:00	Tea Break				
16:00-18:00	Advanced Matplotlib (2) Practical Exercise 4	Free	Mathematical Operations with numpy and scipy (1)	Introduction to CHPC cluster login and job submission	
18:00-19:00	Free Time				
19:00-20:00	Dinner				