An Introduction to HPC and Scientific Computing

CWM, Department of Engineering Science

University of Oxford

**Practical 5: Practical examples of CUDA libraries.**

This practical will review some of the CUDA libraries and there uses which were discussed in the lecture “An introduction to GPUs and how to use them”.

The learning outcomes of this practical are:

* To have some understanding of CUDA libraries and there uses.
* To understand how memory is allocated on the GPU.
* To understand how data is transferred to and from the GPU.

All practicals for this course will be carried out on the Universities ARCUS-B computer. To understand how to use ARCUS-B see the slides from lecture 3. As a reminder log in using ssh as follows:

ssh –CX [teachingXY@arcus-b.arc.ox.ac.uk](mailto:teachingXY@arcus-b.arc.ox.ac.uk)

Where teachingXY is the account that we have issued you with.

If you have not done so clone the github repo for this CWM. To do this, at the command prompt type:

$ git clone <https://github.com/wesarmour/CWM-in-HPC-and-Scientific-Computing.git>

Or

$git pull

To update your local repo.

**Instructions for this practical**

***Part A***

1. cuFFT

***Part B***

1. cuBLAS

***Part C***

1. cuRAND

***Bonus questions***

1. Create a Makefile for your codes
2. Upload your own codes to your git repo

*Do not worry if you don’t complete all of the above. The aim of this practical is to encourage you to write your own C code and become familiar with some of the common functions.*