

Chapter 9

Solutions for exercises

1. On a system with non-shared CPU/GPU memory, execution fails with “Illegal address during kernel execution” because pageable host memory is used in a GPU kernel.
2. It is necessary to use update directives to stage data to the host before calling into the FFT library and to the device after the call finished. This increases the runtime of the applications and additional host to device as well as device to host copies appear on the timeline.
3. The calls to DFTs executed by cuFFT are not properly synchronized with the applications OpenACC kernels which might lead to wrong results.

4. An alternative to call

```
CUFFT_CALL( cufftSetStream(r2c_plan,  
acc_get_cuda_stream ( acc_async_sync ) ) );
```

would be to create a stream with the CUDA API `cudaStreamCreate` and pass that stream into `cufftSetStream` and `acc_set_cuda_stream` for the `acc_async_sync` value.