nVidia CUDA

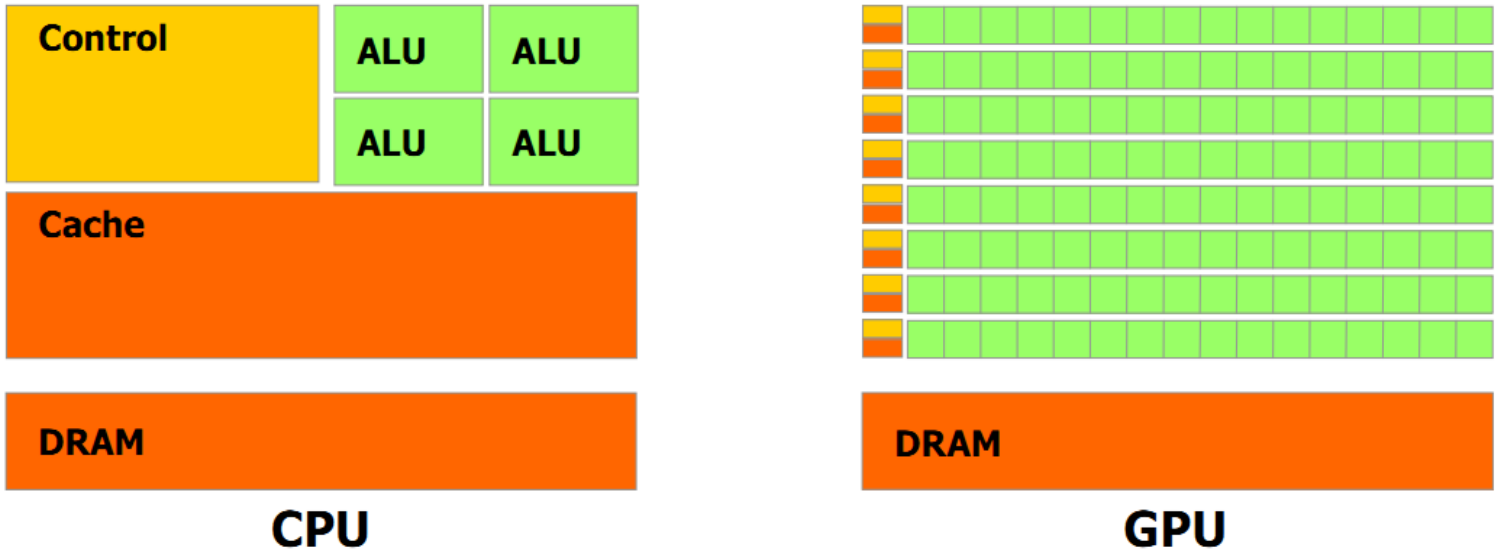
alebo

ľahká cesta k masívnemu paralelizmu

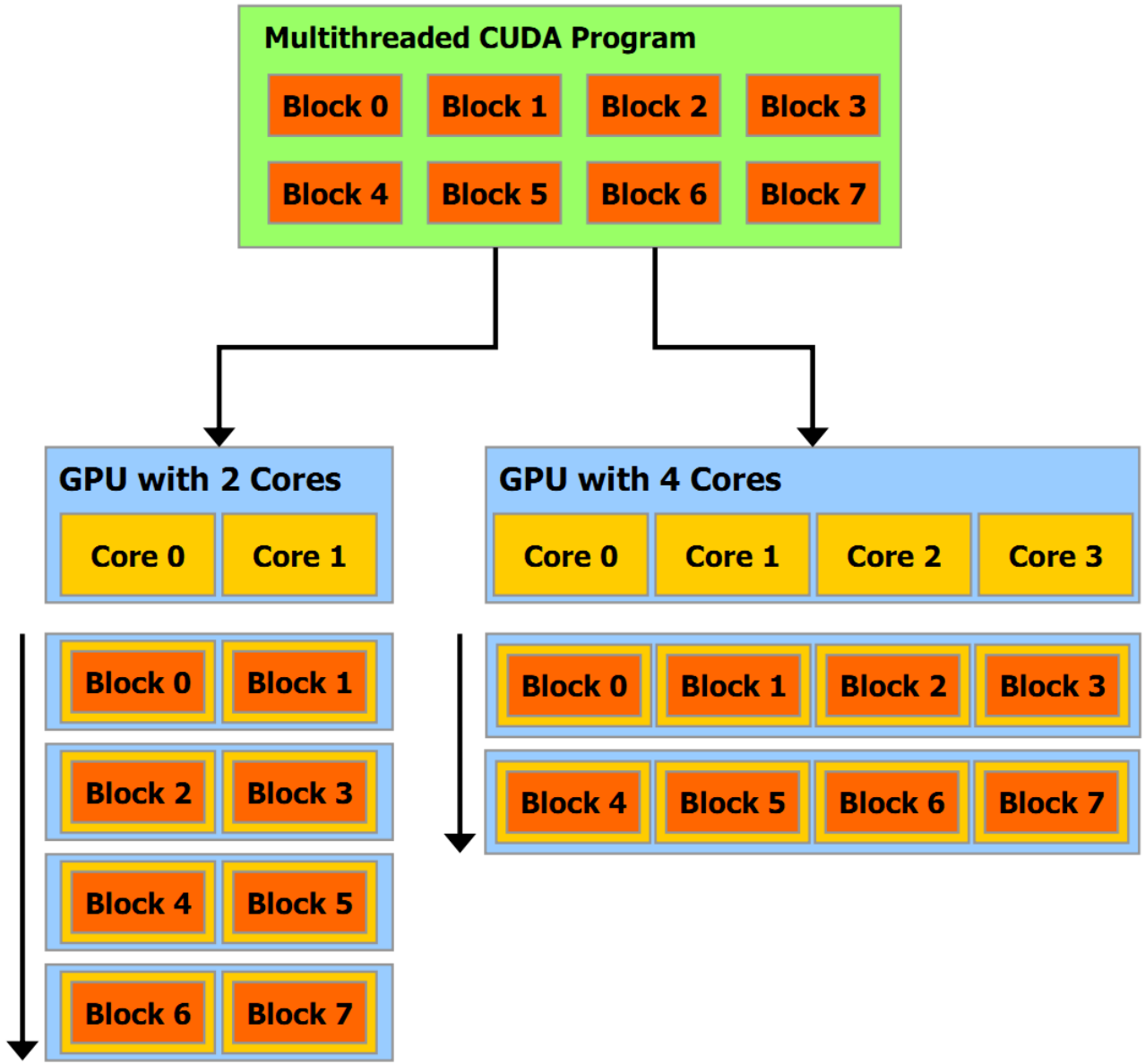
Úvod

- GPGPU – paradigma vs. realita
- BrookGPU
- CUDA
- OpenCL
- DirectCompute

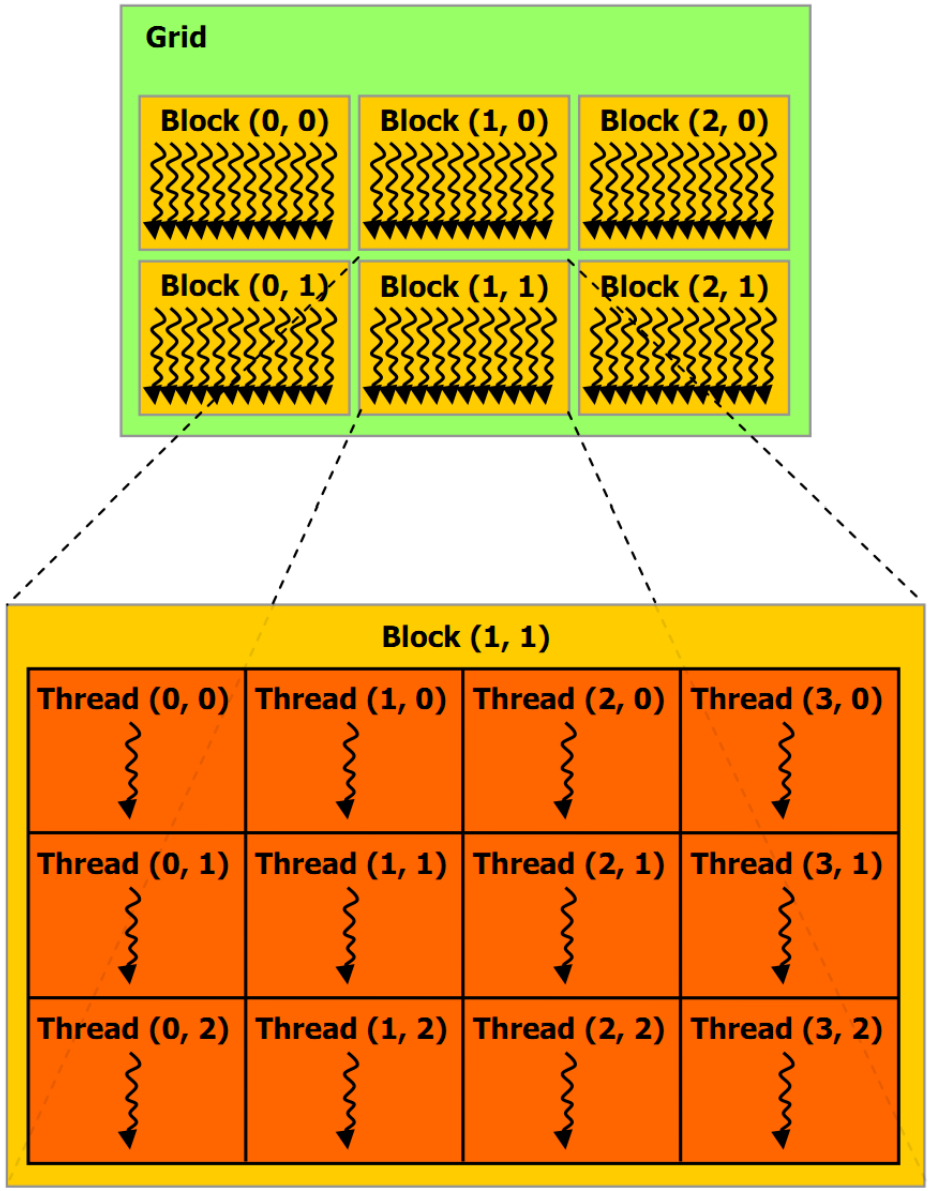
CPU vs. GPU



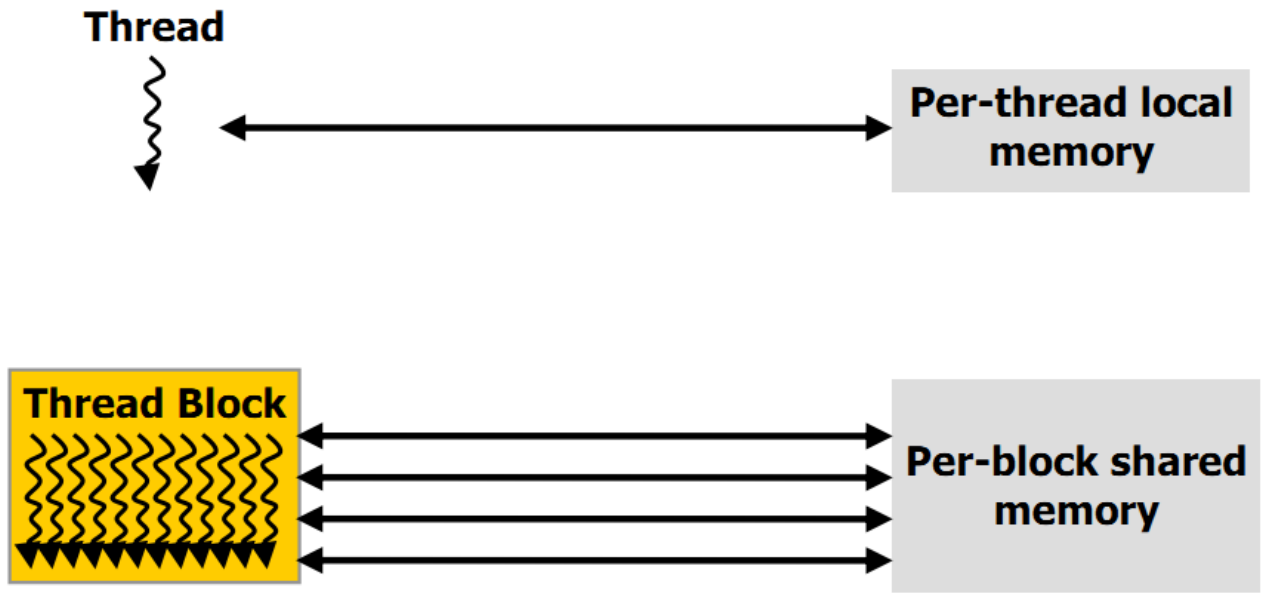
Vykonávanie



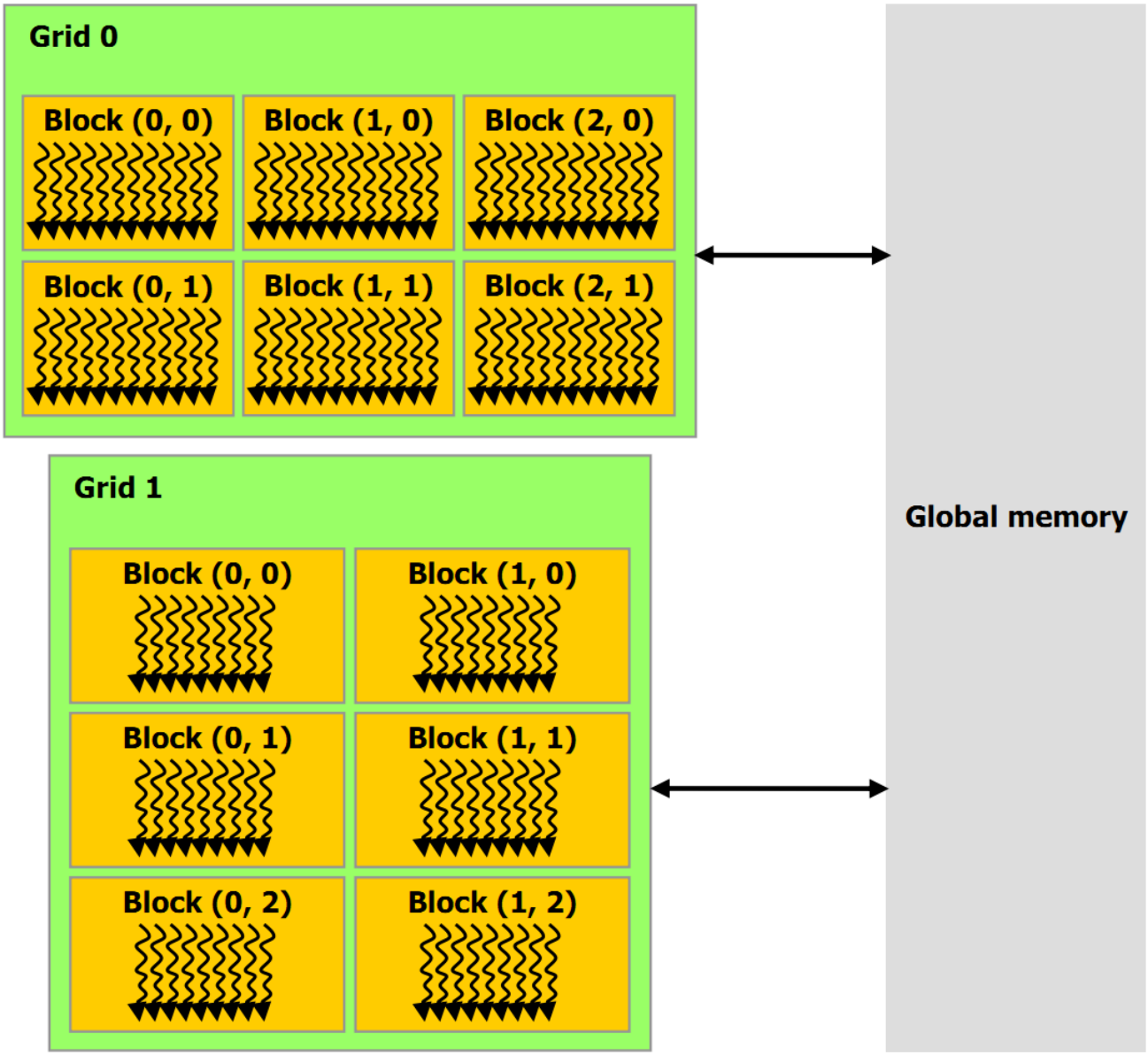
Vlákna a warpy



Prístup do pamäte

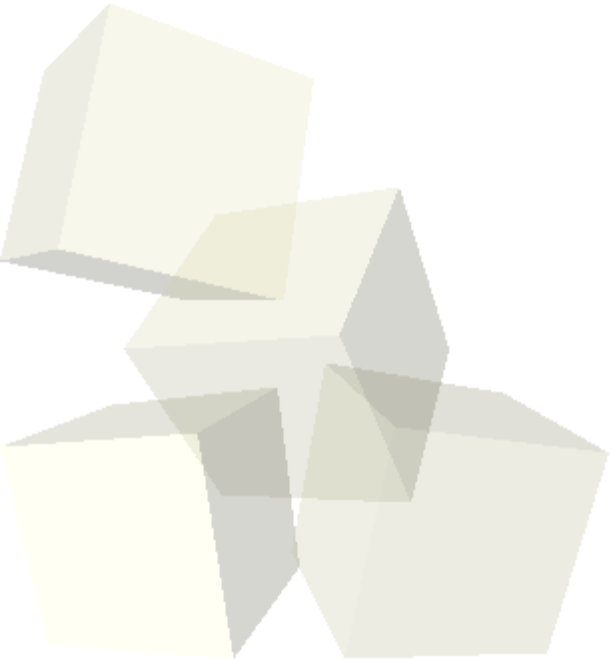


Prístup do pamäte – ach jaj



Funkcie

- __host__
- __device__
- __global__



Premenné

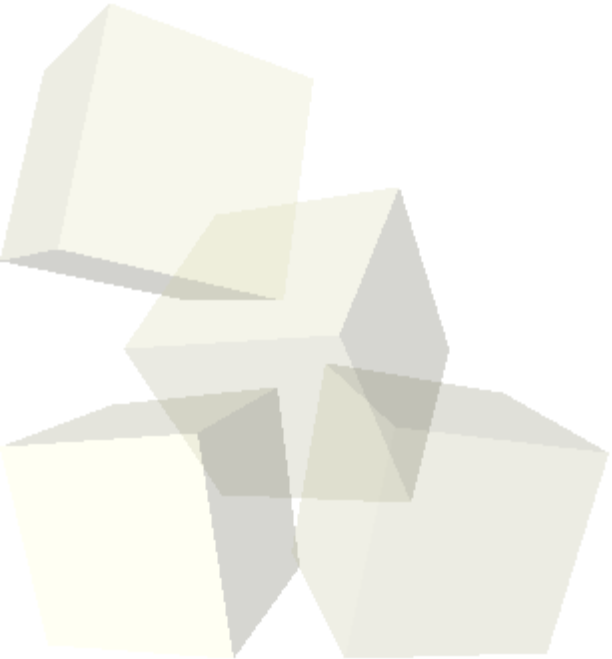
- __device__
- __shared__
- __constant__
- __restrict__

Typy premenných

char1, uchar1, char2, uchar2, char3, uchar3, char4, uchar4, short1, ushort1, short2, ushort2, short3, ushort3, short4, ushort4, int1, uint1, int2, uint2, int3, uint3, int4, uint4, long1, ulong1, long2, ulong2, long3, ulong3, long4, ulong4, longlong1, ulonglong1, longlong2, ulonglong2, float1, float2, float3, float4, double1, double2, dim3

Vnútorné premenné

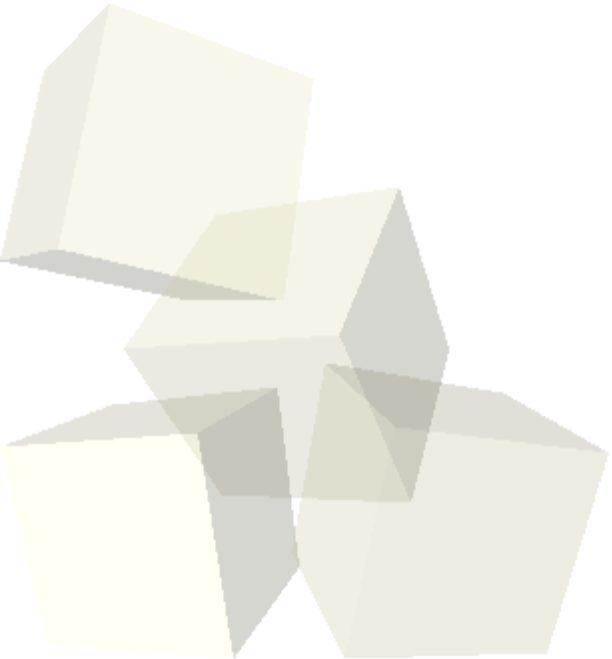
- dim3 gridDim
- uint3 blockIdx
- dim3 blockDim
- uint3 threadIdx
- int warpSize



Atomické funkcie

atomicAdd, atomicSub, atomicExch, atomicMin, atomicMax, atomicInc, atomicDec, atomicCAS

atomicAnd, atomicOr, atomicXor



Dôležité funkcie

- __syncthreads
- __threadfence_block, __threadfence
- __all, __any, __ballot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