## GALA

## EIRB

High Performance Embedded Computing - SE301

disk

bulge

Num. of particles	Total particles	Galaxy	Element
16384	16384	Milky way	disk
16384	32768	Andromeda	disk
8192	40960	Milky way	bulge
8192	49152	Andromeda	bulge
16384	65536	Milky way	halo
16384	81920	Andromeda	halo

n² Interactions 6,7.109

Position Acceleration Mass

## NVIDIA Jetson TK1 development board

PCI



Parallel Tasks

Master thread,

-pragma omp parallel for -local variable

-2048p→120 FPS



ARMv7 32b CPU

NEON engine

32k I\$ 32k D\$

ISP

VIDEO AUDIO

ARMy7 32b CPU

32k IS 32k D\$

ARMv7 32b CPU

32k IS 32k D\$

ARMy7 32b CPU

NEON engine

32k I\$ 32k D\$

GPU - GK20A

Scheduler

192 CUDA cores

Shared memory Data cache -512 threads -1024 p→800+ FPS

-Coalesced access

-shared memory

GPU

CPU

ON INVIDIA.

n blocks

p threads

load from CPU memory to GPU memory load from GPU memory to CPU memory

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