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**Title:** Exploiting multi-level parallelism in streaming applications for heterogeneous platforms with GPUs  
**Issue Date:** 2013-06-26
Stellingen (Propositions)
Exploiting Multi-Level Parallelism in Streaming Applications for Heterogeneous Platforms with GPUs
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1. Heterogeneous computing platforms play an increasingly important role for accelerating computationally intensive applications in e.g., automotive, medical, entertainment and bio-informatics fields. (Chapter 1)

2. Heterogeneous computing platforms support the traditional types of parallelism, such as e.g., instruction-level, data, task, and pipeline parallelism, and increasingly give the possibility to combine multiple types of parallelism at multiple levels (i.e. they support multi-level parallelism). (Chapter 1)

3. The polyhedral representation of computer programs allows to efficiently identify data parallelism and transform it into the form suitable for programming data parallel accelerators (such as GPUs). (Chapter 3)

4. To exploit the rich parallelism opportunities offered by heterogeneous platforms, having a multi-level program model is highly advantageous. (Chapter 4)

5. The Hierarchical Polyhedral Reduced Dependence Graph (HiPRDG) intermediate representation is useful for generating multi-level programs (MLPs) featuring different types of parallelism, such as task, data, and pipeline parallelism. (Chapter 4)

6. In streaming applications, kernel acceleration is only one side of the performance coin. Efficiently managing the host-accelerator data exchange is of equal or even greater importance. (Chapter 5)

7. A tailor-made suit fits better than a standard one. The same holds for architecture-aware parallelization for heterogeneous platforms. (Chapter 6)

8. The HiPRDG representation opens the door for highly efficient tailor-made parallel program generation and auto-tuning for the next generations of multi-level heterogeneous platforms with diverse accelerators. (Chapter 7)

9. An answer found unleashes a new ideas round.

10. Only after you make the journey yourself, can you fully appreciate the effort of others who made it already.

11. Doing a PhD at Leiden University is not only about research; learning some essential survival skills, such as e.g., Zumba, cooking, and singing karaoke, is needed too.