DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
ODENSE UNIVERSITY

COMPUTER SCIENCE COLLOQUIUM

Mapping Powerlists onto Hypercubes

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Abstract: The field of parallel algorithm design has become a major area of research over the last decade. However, the field has yet to develop a standard language for expressing these algorithms. The *Powerlist* notation, introduced by Jayadev Misra, gives us a succinct representation of a certain class of parallel algorithms, amenable to algebraic proofs of correctness.

In this talk we will present several well known algorithms in the powerlist notation, focusing the *prefix sum* problem. We derive an efficient algorithm for hypercubic architectures and then derive a strategy for implementing most powerlist functions efficiently on the same class of architectures. The focus of this work is on correct and rigorous derivations; efficiency claims will only be backed by operational reasoning.

Kim Skak Larsen