Distributed computing of n-dimensional simultaneous Diophantine approximation problems

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In this talk we compare different architectures for solving a non-trivial number-theoretic challenge. The algorithms demonstrated will be used for solving n-dimensional simultaneous Diophantine approximation problems. The codes are optimized for different architectures and based on the results of recent researches. The investigated architectures were (1) a Sandy Bridge Intel Core i5-2450M, (2) a supercomputer cluster with 90x Intel Xeon E5520 Nehalem Quad Core and (3) ATI Radeon 7970 GPU Card. We show that in some particular applications the Lenstra-Lenstra-Lovász (L^3) algorithm can be substituted by the presented ones in order to reduce their practical running time.

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