

第 26 回先進スーパーコンピューティング環境 (ASE) 研究会実施報告

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東京大学情報基盤センター ASE 研究会 (Advanced Supercomputing Environment) は内外からの講演者を招いて不定期に開催している。2017 年 1 月 6 日 (金) に実施された第 26 回 ASE 研究会¹では, Edmond Chow 博士 (ジョージア工科大学) に Southwell 緩和法に基づく並列反復解法の最先端の研究についてご講演いただくとともに, 関連分野についてセンター教員から 3 件の発表を実施した。年始めの慌ただしい時期であったが, 学内外から合計 15 名の出席者があり, 活発な議論が行われた。



写真：講演する Chow 博士

表 1 プログラム

時間帯	講演者	題目
13:30-13:40	Kengo Nakajima (ITC, The University of Tokyo)	Welcome Address
13:40-14:40	Edmond Chow (Georgia Institute of Technology, USA)	Variants of the Southwell Iterative Method for High Performance Computing
The development of sparse linear solvers for high performance computing is largely concerned with parallelism, rapid convergence, and low data access cost. We propose efficient variations on the little-known Southwell iterative method, which may be used as a preconditioner or multigrid smoother. The Southwell iterative method is similar to the Gauss-Seidel method, but instead of relaxing rows of the system of equations in a specific order, at each step we relax the row with the largest residual. We propose a parallel version of this method and a distributed version that can be used efficiently on distributed memory computers. Asynchronous operation of these methods is also envisaged. A surprising result is that the new parallel Southwell method can reach a desired accuracy in fewer parallel steps than the Jacobi method while also performing fewer computations and communications per parallel step. This is joint work with Jordi Wolfson-Pou and Fan Zhou.		
14:55-15:25	Masatoshi Kawai (ITC, The University of Tokyo)	Parallel Block ICCG Method for Ill-Conditioned Problems
15:25-15:55	Tetsuya Hoshino (ITC, The University of Tokyo)	OpenACC Directive Extensions Towards Realizing Performance Portability
15:55-16:20	Kengo Nakajima (ITC, The University of Tokyo)	Parallel Preconditioning Method for Iterative Linear Solvers on Multicore/Manycore Clusters
16:25-16:30	Kengo Nakajima (ITC, The University of Tokyo)	Closing

¹ <http://www.cc.u-tokyo.ac.jp/event/ase/26.html>