

Toward smart-tunned post-petascale librairies and methods **Leroy Anthony Drumond, LBNL, and, Serge G. Petiton, INRIA-Saclay**

As the High Performance Computing community gears up for the Petascale and beyond era, it is necessary to identify and rapidly make available robust software technologies to enable high-end computer applications to run efficiently on these emerging systems. We work on the development and evaluation of different techniques to automatically adapt and supply the parameterization and the implementation of numerical functionalities in a wide variety of computational platforms and run time configuration scenarios.

Additionally, we integrate algorithmic optimizations with the best results of deploying auto-tuning techniques to provide a finite set of optimal implementations of a given numerical kernels to be deployed by the user at run time in a smartly and automated manner. Lastly, we works towards the definition of an international set of software development standards to reuse existing numerical software libraries and integrate new strategies, algorithms that will allow these libraries to scale in state-of-the-art high-end computing systems.