Contribution ID: **67**　　　　　　　　　　　　　　　　　　　　　　　　　Type: **Short talk**

Composition of Scheduling and Control-Theory Techniques

Wednesday 22 March 2023 14:40 (10 minutes)

The management and allocation of resources to users in HPC infrastructures often relies on the RJMS.
One key component for an optimized resource allocation, with respect to some objectives, is the scheduler.

Scheduling theory is interesting as it provides algorithms with performance guarantees.
These guarantees come at the cost of tedious and complex modeling effort.
The growing complexity of nowadays and future platforms (hardware heterogeneity, memory/bandwidth/energy constraints)
do push to its limit the scheduling approach.
Taking into account this new challenges either requires the design of new overly complex models, or exhibits the crudeness of the model.

In a sense, the scheduling approach fails to capture the dynamic aspects of the platforms.
From the control theory point of view, scheduling algorithms are open-loop systems: the actual state of the platform is not fed back into the decision process.
By closing the loop and using some control theory results/techniques, we propose to study how to combine both techniques.
This study would take place at various levels: from theory to actual applications.

JLESC topic

control theory, scheduling

Primary authors:　RUTTEN, Eric (INRIA);　BLEUSE, Raphael (Univ. Grenoble Alpes, Inria)

Presenter:　BLEUSE, Raphael (Univ. Grenoble Alpes, Inria)

Session Classification:　Short Talks on Distributed Resources

Track Classification:　Programming languages and runtimes