Proposal for Computing Time on the Supercomputer JUGENE

New project proposal / Project extension for project xxxx

Period: yy 20yy – yy 20yy

PROJECT TITLE

Principal investigator:

Project contributors:

Contents

1 Project Description

1.1 Introduction

Give a short outline of the scientific background
of your research, including references.

(about 1 page)

1.2 Preliminary Work

Provide a brief summary of your preliminary work
in connection with the proposed project,
including references.

(about 1 to 2 pages)

1.3 Project Details

Describe your proposed project in detail,
structured in sub-projects, if applicable.
Please, include information about:
- scientific questions you want to address
- scientific goals you want to reach
- approach to reach these goals
- expected impact on the research area

1.3.1 Sub-project 1

...

1.3.2 Sub-project 2

...

(1 to 2 pages per sub-project)

1.4 Description of Methods and Algorithms

Describe the scientific and numerical methods and algorithms
you are planning to use/improve/develop.

(about 1 to 2 pages)

1.5 Work Schedule

Please, provide a short work schedule each sub-project.

1.5.1 Sub-project 1

...

1.5.2 Sub-project 2

...

(about 0.5 pages per sub-project)

1.6 Code performance

Elaborate which supercomputer is suitable for your proposed project and why. Include information about:

- which code will be used
- amount of memory necessary (per core/node and in total)
- scaling plots and table with speedup results for runs with a typical problem size of the planned project
- describe architecture, machine/system name, and problem size used for the scaling plots

(about 1 page)

Here is an example table and a scaling plot:

Table 1: Scaling behavior of `code` on `architecture and system` at `location`. This test was performed with $5 \cdot 10^6$ particles, absolute timings per timestep (s) and relative speedup normalized to 256 cores are given.

#cores	absolute timing (s)	speedup
512	189.6	1.0000
1024	99.0	1.9154
2048	55.6	3.4088
4096	30.8	6.1376

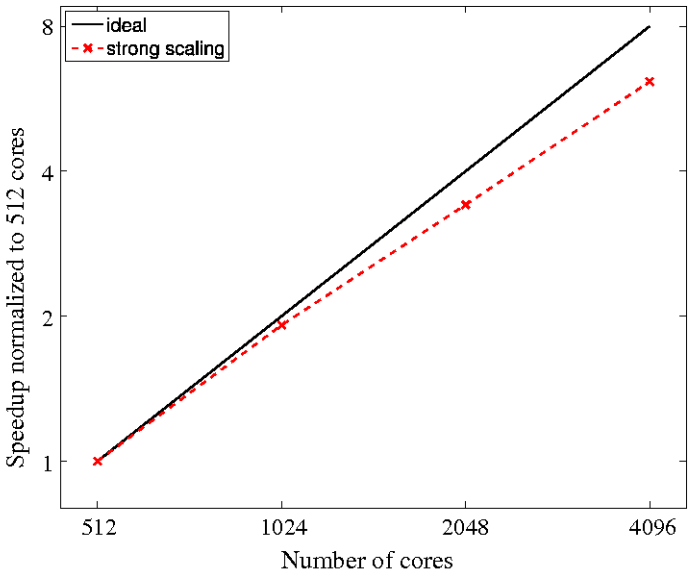

Figure 1: Scaling behavior of `code` on `architecture and system` at `location`. This test was performed with $5 \cdot 10^6$ particles.

1.7 Estimated resources on JUGENE

```
Outline the amount of resources you request for the current
granting period and describe in detail:
  - problem size for planned runs
  - number of runs planned
  - estimated computing time per run
  - total amount of requested computing time
  - computing time for pre- and/or post processing

Please, specify the requested time in appropriate units
like core hours, node hours, rack days (RD) or rack months (RM).

Hints:

- JUGENE: 1 RM = 30.4 RD = 747 110.4 node hours
                = 2 988 441.6 core hours >

Note that 1 rack month has a value of about 30000 EUR.

(about 0.5 to 1 page)

Here is an example for estimating resources :
```

Sub-project	Size (particles)	Single Δt 1 Rack JUGENE	timesteps /run	Rack-h /run	# runs	Rack-days /sub-project
Sub-project 1	$8 \cdot 10^6$	40s	500	5	50	10
Sub-project 2	$2 \cdot 10^6$	20s	1000	6	100	25
...						

Total requested time on JUGENE: `rd` RD $\simeq$ `rm` RM

2 Progress report (yy/20yy-yy/20yy)

In case of an application for a project extension, please include here the report of the work done in the last period, structured in sub-projects, if applicable.
Please, include the following information
- brief description of the (sub-) project
- scientific results obtained
- resources used
- performance, scaling behavior (if not already in 1.6)

2.1 Sub-project A

...

2.2 Sub-project B

...

(about 2 to 4 pages per sub-project)

2.3 Publications from project xxxx

<list>

Publications published in peer-reviewed journal only.

2.4 Theses completed within project xxxx

<list>

Please, give author's name and degree and the title of the thesis.

2.5 Additional references

<list>

2.6 Graphics suitable for the general public

In order to promote simulation science, we are interested in attractive color pictures which were created in your project, and which can be interesting for a general public.
We ask your permission to use these pictures in publications about JSC, NIC or GCS.