

Proposal for Computing Time on the Supercomputer JUROPA

New project proposal / Project extension for project xxxx

Period: yy 20yy – yy 20yy

PROJECT TITLE

Principal investigator:

Project contributors:

Contents

1	Project Description	2
1.1	Introduction	2
1.2	Preliminary Work	2
1.3	Project Details	2
1.3.1	Sub-project 1	2
1.3.2	Sub-project 2	2
1.4	Description of Methods and Algorithms	2
1.5	Work Schedule	3
1.5.1	Sub-project 1	3
1.5.2	Sub-project 2	3
1.6	Code performance	3
1.7	Estimated resources on JUROPA	5
2	Progress report (yy/20yy-yy/20yy)	6
2.1	Sub-project A	6
2.2	Sub-project B	6
2.3	Publications from project xxxx	6
2.4	Ph.D. theses completed within project xxxx	6
2.5	Additional references	6
2.6	Graphics suitable for the general public	6

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 for 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 an example table and 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 32 nodes are given (1 node = x cores, all cores per node are used).

#nodes	absolute timing (s)	speedup
32	379.2	1.0
64	198.0	1.9
128	112.2	3.4
256	61.6	6.2

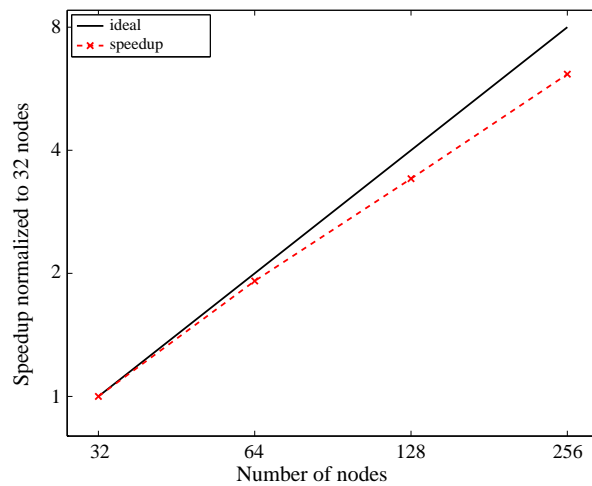


Figure 1: Scaling behavior of code on architecture and system at location. This test was performed with $5 \cdot 10^6$ particles.

1.7 Estimated resources on JUROPA

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 time per run
- number of cores/nodes per run
- total amount of requested time
- time for pre- and/or post processing

Please, specify the requested time in appropriate units like core hours or node hours

Hints:

- JUROPA: 1 node hour = 8 core hours

Note that 1000 node hours have a value of about 400 EUR.

(about 0.5 to 1 page)

Here an example for estimating resources

Sub-project	Size (particles)	Single Δt nodes hours	timesteps /run	node hours /run	# runs	node hours /sub-project
JUROPA						
Sub-project 1	$8 \cdot 10^6$	1.8	500	900	25	22 500
Sub-project 2	$2 \cdot 10^6$	0.5	1000	500	50	25 000
...						

Total requested time on JUROPA: nh node hours
Between 64 and 256 nodes/run will be used.

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 Ph.D. 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.