



PARTNERSHIP FOR
ADVANCED COMPUTING IN EUROPE

Summer of HPC

Leon Kos — programme coordinator
and the SoHPC team



ISC High Performance
The HPC Event.

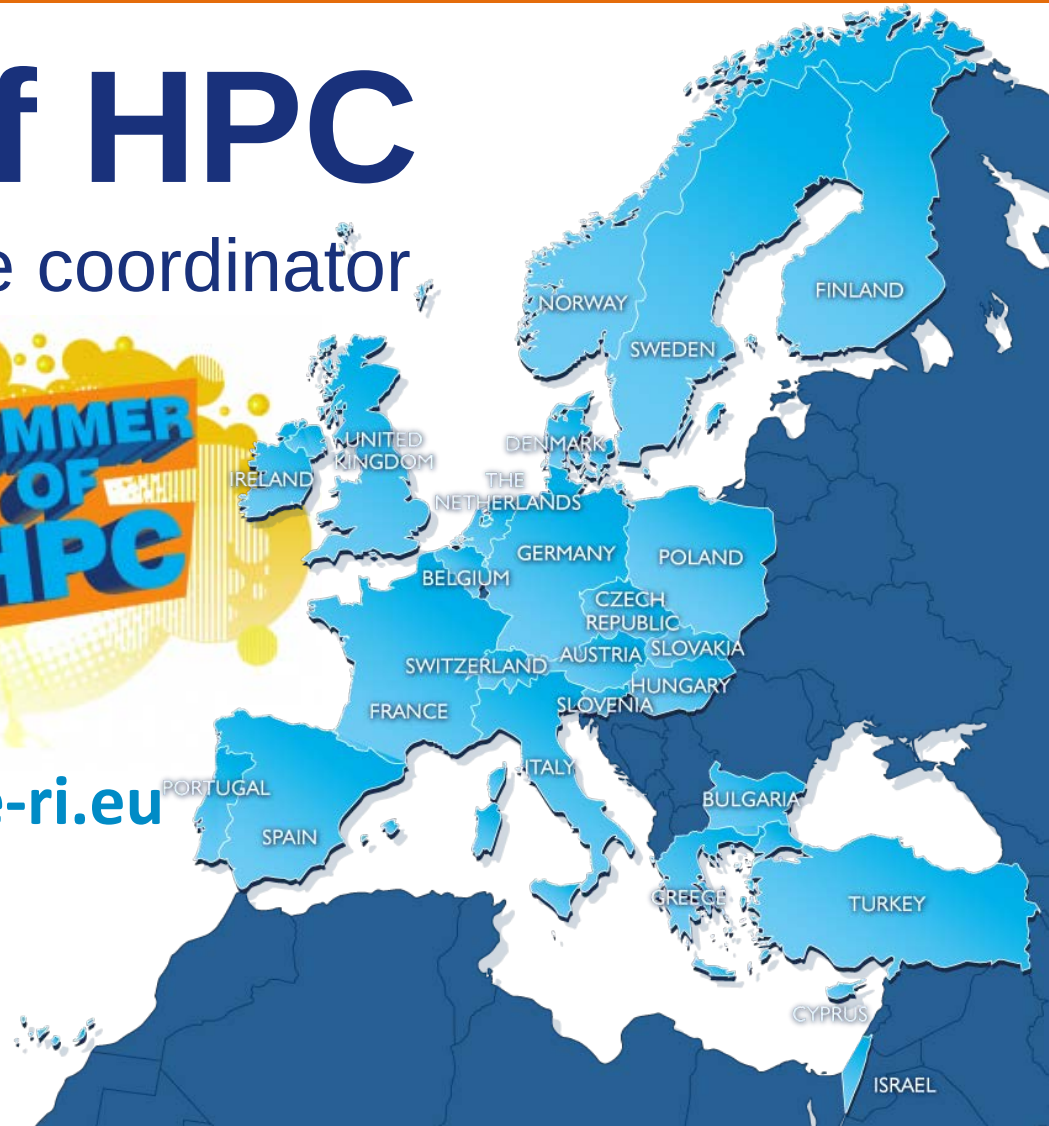


<http://summerofhpc.prace-ri.eu>

at ISC2016

Frankfurt, 21 June 2016

29/06/2016





Vision

PRACE wishes to inspire and encourage the next generation of software engineers, system administrators, and general users of HPC systems in order to keep Europe at the forefront of supercomputing.



Goals

- The primary goal of the programme is **outreach**. The programme aims to ensure a positive experience for all students and through that experience to encourage them in their path to become the next generation of HPC users. It is hoped that the programme will also create goodwill around PRACE and HPC both in the home institutions and amongst the peers of all applicants and participants.
- The secondary goal of the programme is the successful completion of the student projects; with the visualisations produced being of benefit to PRACE in future **outreach** and **dissemination** activities.





Timeline

- December — Projects and application dates announced
- January — Call for Applications opens
- February — Call for Applications closes
- March — Student selection and travel arrangements
- first week of July — Training week
- July – August — Students at sites with weekly telcos
- end of August — Presentations and reports by students
- October — Awards ceremony

Projects

- 20+ projects with HPC and visualization relevance (outreach).
- Proposed by mentors that work with students during the summer.
- Ideally one-to-one (student-mentor) match.
- 10+ sites hosts at least two students.





Student Selection Process

- Students apply selecting maximum 3 projects they are particularly interested in doing and why.
- The Selection panel reviews each application evaluated by two reviewers.
- Grading based on CV, reference, code test and communication skills including social media.
- Consensus meeting on ranking by projects.

History

- Programme started in 2013 with 24 students
- 2014 edition with 10 students
- 2015 edition with 20 students at 10 sites





Training week

- The main purpose of the training week is team building that will enable outreach activities by students with blogging at the **summerofhpc.prace-ri.eu** site and social media.
- Basic training in parallel programming, visualization and Summer of HPC programme vision is given.





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Training week in Barcelona





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Projects 2016

1. BSC

- Development of sample application in PyCOMPSSs/COMPSSs (Rosa M Badia)
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2. CasToRC

- Topological susceptibility by direct calculation of the eigenmodes (Constantia Alexandrou)
- Mixed-precision linear solvers for lattice QCD (Dr. Giannis Koutsou)

3. CC SAS

- Calculation of nanotubes by utilizing the helical symmetry properties (J. Noga)
- Apache Spark: Bridge between HPC and Big Data? (Michal Pitoňák)

4. CINECA

- In Situ or BAtch Visualization of biogeochemical state of the Mediterranean Sea (Paolo Lazzari)
- In Situ Visualizzazione of NAVier-Stokes Tornado Effect (Sandro Frigio)

5. EPCC

- Parallelising Scientific Python applications (Neelofer Banglawala)
- Weather forecasting for outreach on Wee Archie supercomputer (Nick Brown)
- Outreach app for smartphone cluster (Amy Krause)

6. GRNET

- Re-ranking Virtual Screening results in computer-aided drug design (Zoe Cournia)
- Molecular Dynamics simulation of the E545K PI3Ka mutant (Zoe Cournia)

7. ICHEC

- Development of a Performance Analytics Dashboard (Michael Lysaght)
- Visualisation of fluids and waves (Adam Ralph)

8. IT4I

- Visualization of real motion of human body based on motion capture technology (Petr Strakoš)
- Journey to the centre of the human body (Milan Jaroš)

9. JCS

- Shape up or ship out – You decide! (Andreas Beckmann)
- Phine quarks and cude gluons (Stefan Krieg)

10. UL

- The CFD devil is in the CAD detail (Marijo Telenta)
- Link prediction in large-scale networks with Hadoop framework (Andrej Kastirin)

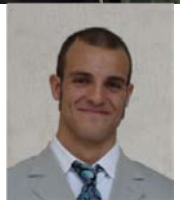




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Awards

- The Best HPC Ambassador award
 - Presented to the participant who best embodies the outreach spirit of the programme.
- The Best Visualisation Award
 - Presented to the participant who completes the best visualisation during the Summer of HPC Programme.
- The awards consist of a diploma, a trophy and a budget of € 1.500,- per winner to go to a PRACE Training Event or similar.
- Awards Ceremony is organised



PRACE Summer of HPC

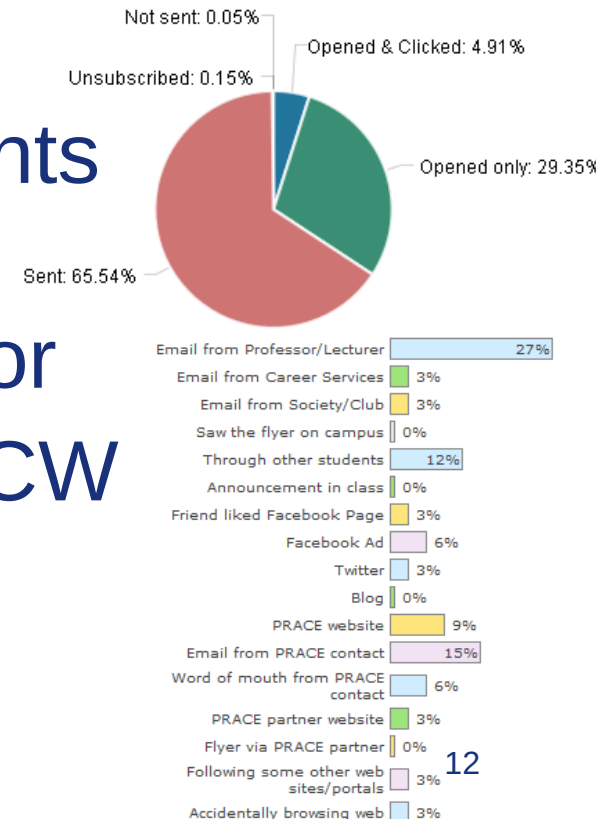




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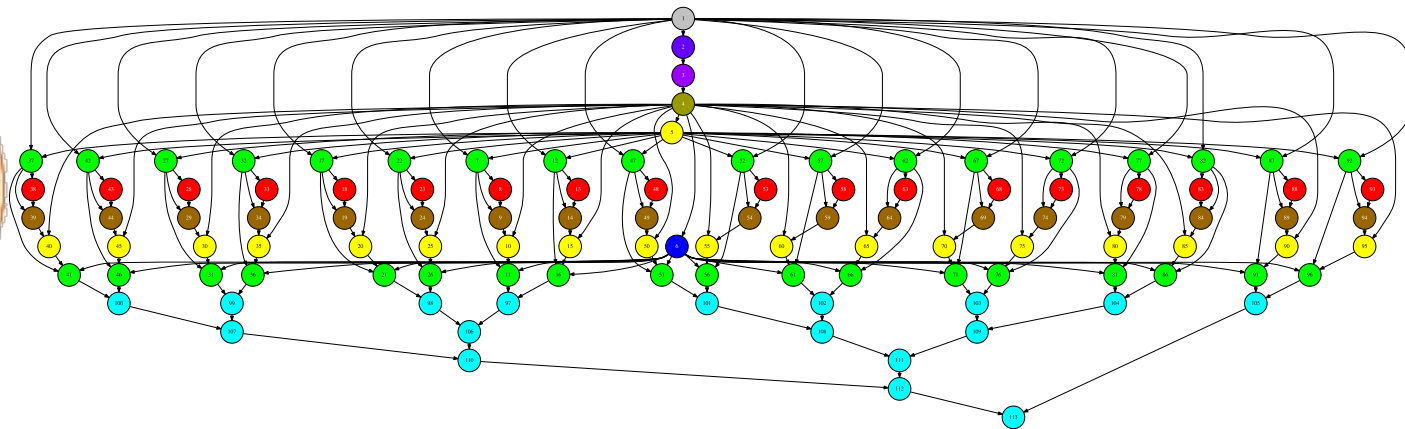
KPI and Impact

- Google analytics and Klout
- PRACE website announcements tracked by Mailpoet
- E-mail is a prime communicator
- Surveys for feedback with BSCW
- Excellent examples of careers



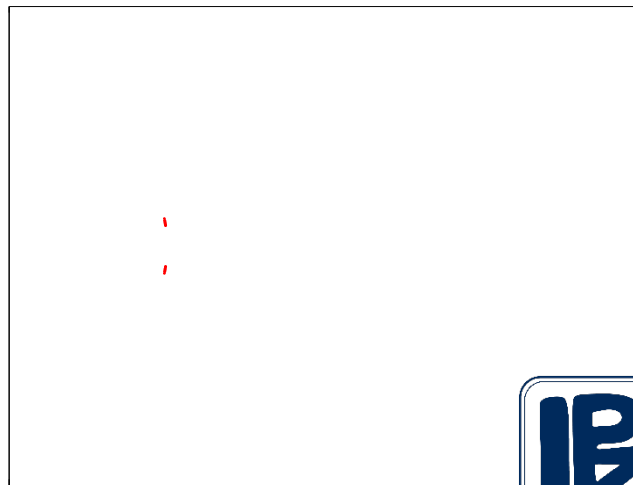
BSC Spain

- *Development of sample application in PyCOMPSs/COMPSs*



CaSToRC Cyprus

- Topological susceptibility by direct calculation of the eigenmodes
- Mixed-precision linear solvers for lattice QCD

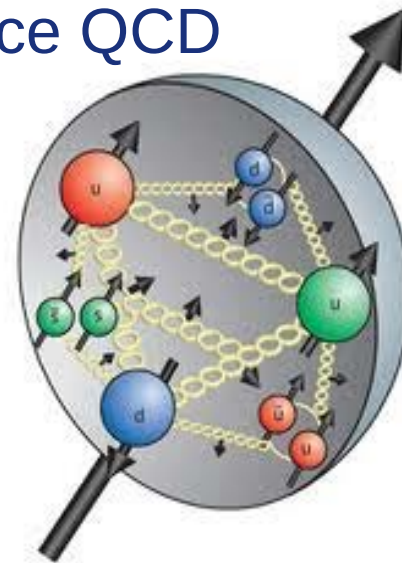


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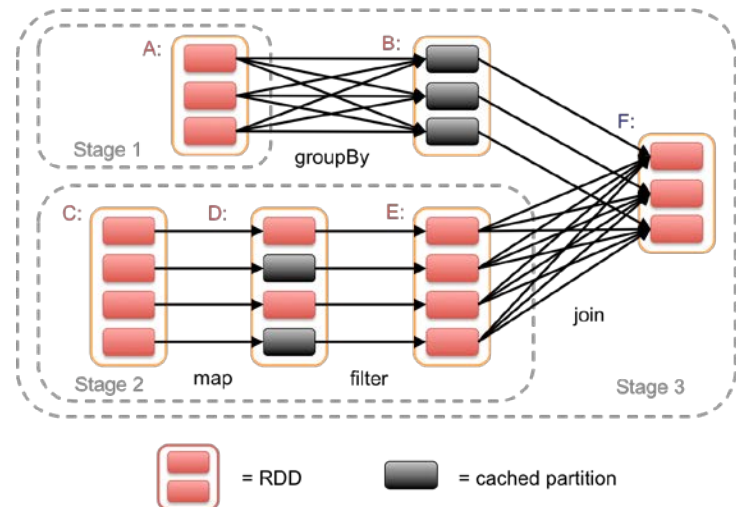
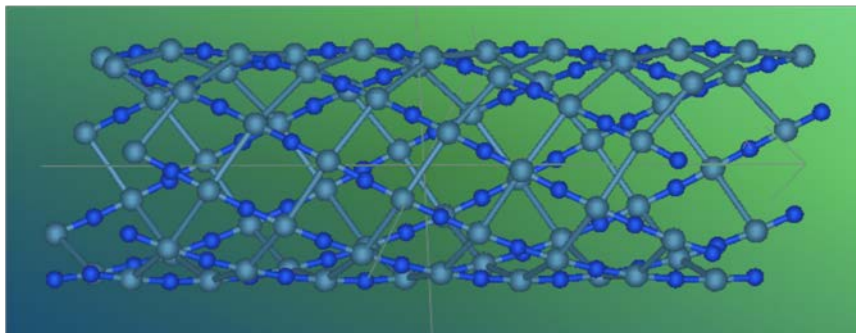
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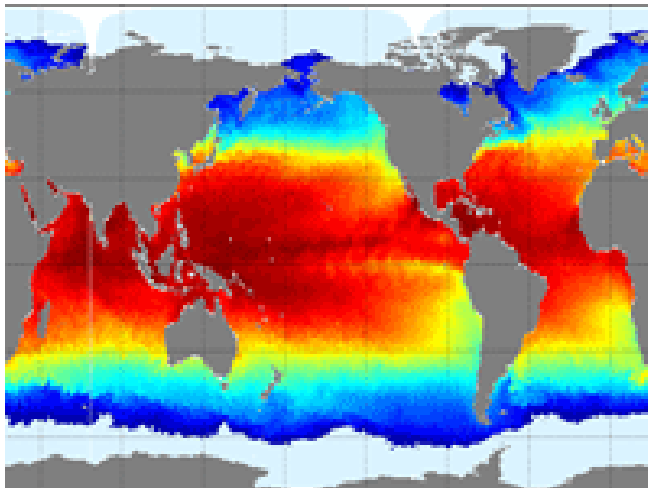
CC SAS Slovakia

- *Calculation of nanotubes by utilizing the helical symmetry properties*
- *Apache Spark: Bridge between HPC and Big Data?*

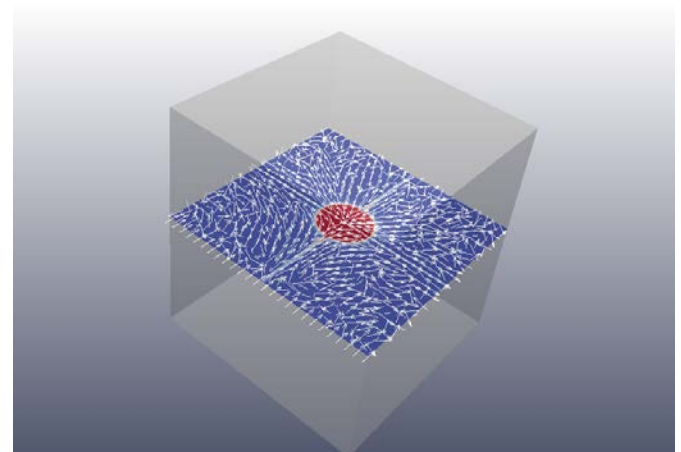


CINECA Italy

- *In Situ or BAtch Visualization* of biogeochemical state of the Mediterranean Sea
- *In Situ Visualization of NAvier-Stokes Tornado Effect*

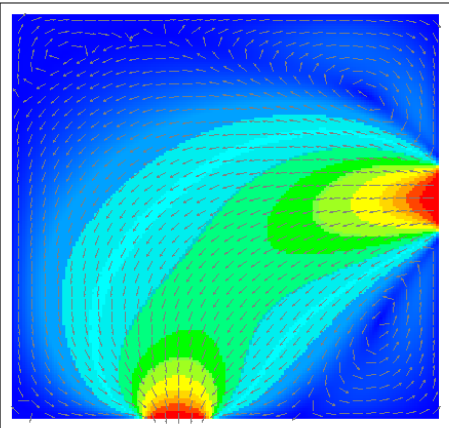


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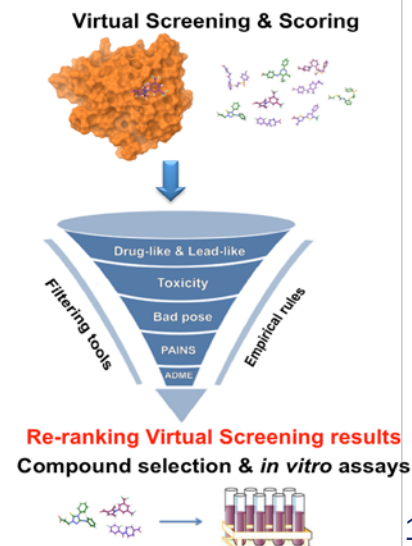
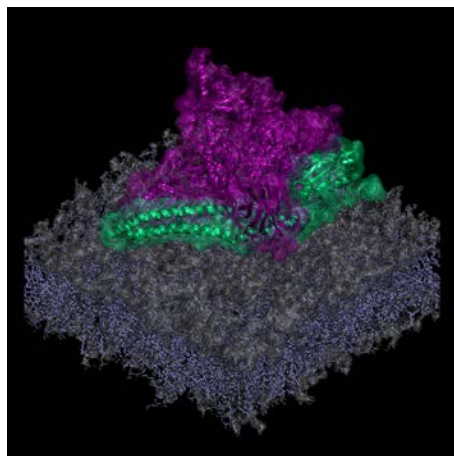
EPCC UK

- Parallelising Scientific Python applications
- Weather forecasting for outreach on Wee Archie supercomputer
- *Outreach app for smartphone cluster*



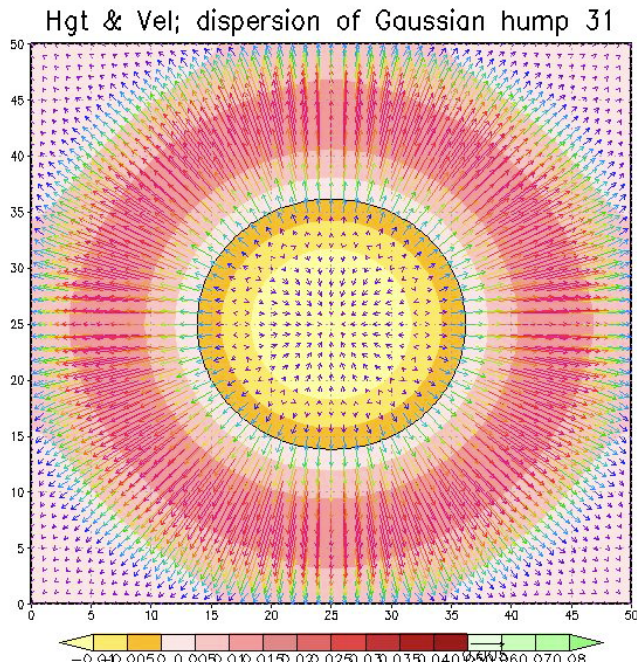
GRNET Greece

- Re-ranking Virtual Screening results in computer-aided drug design
- Molecular Dynamics simulation of the E545K PI3Ka mutant



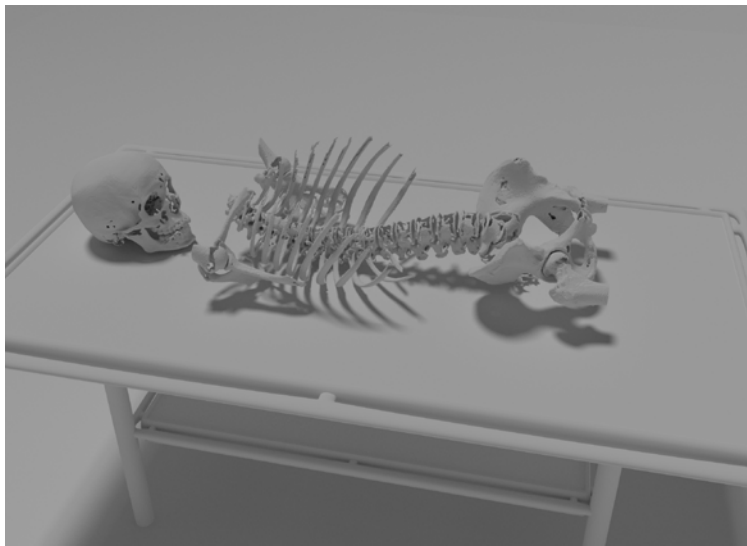
ICHEC Ireland

- *Development of a Performance Analytics Dashboard*
- *Visualisation of fluids and waves*



IT4I Czech Republic

- *Visualization of real motion of human body based on motion capture technology*
- *Journey to the centre of the human body*

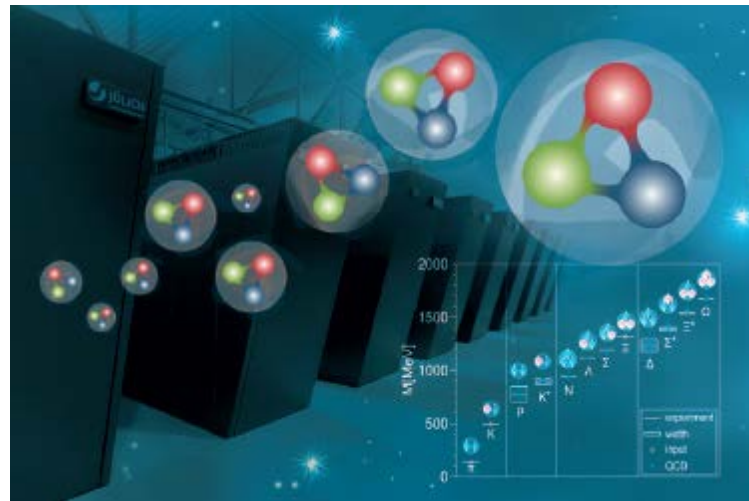
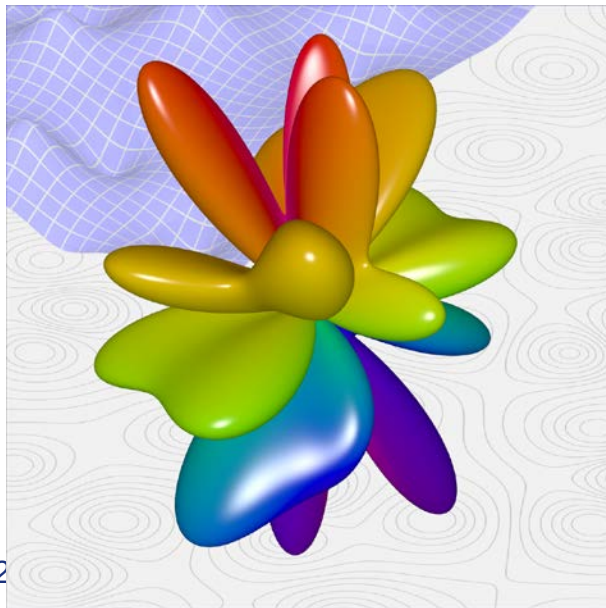


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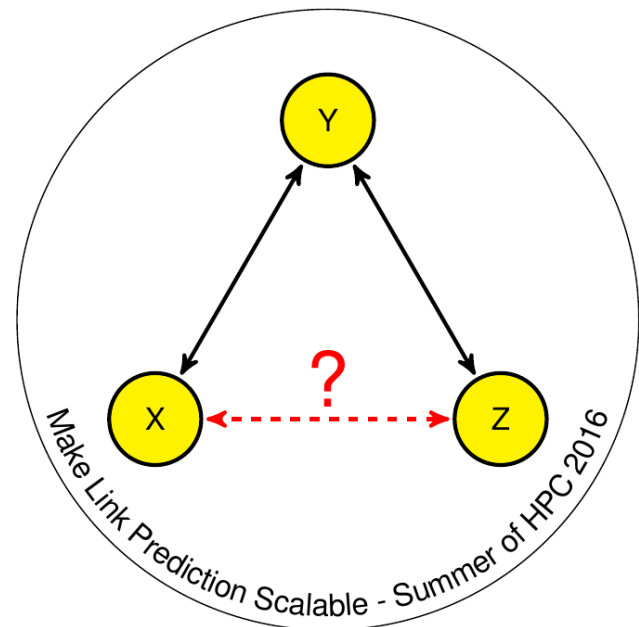
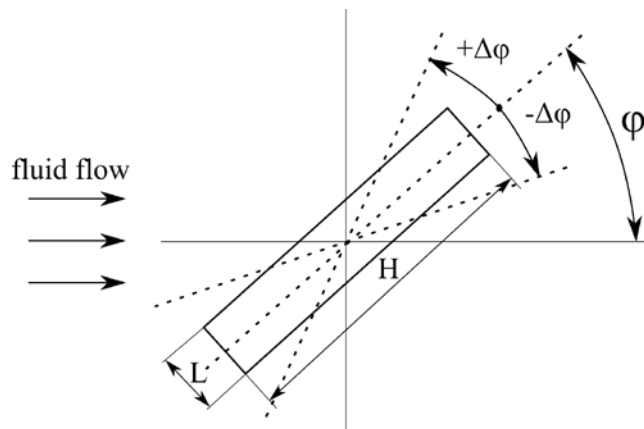
JSC Germany

- Shape up or ship out – You decide!
- *Phine quarks and cude gluons*



UL Slovenia

- The CFD devil is in the CAD detail
- Link prediction in large-scale networks with Hadoop framework





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- Thank you for your attention!
- Questions?
- Discussion?
 - What's the difference when comparing to similar programmes?
 - Lessons learnt?
 - International collaboration?

