
# STRONG-2020: Project Review
# Virtual Access

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# Virtual Access

New tool in hadron physics community

Web based:

- Access to software for the analysis of experiments in hadron physics
- Link between theory and experiment: correction and interpretation
- Access for a large users community
- Open-access to computer codes
- Documentation
- Cloud based computing resources

Acts as a seed activity and multiplication by and for a large users community

Guidance and Advice from International Assessment Board

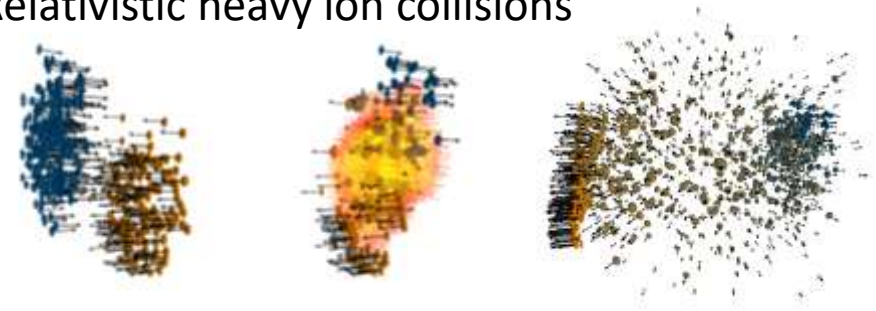
# Virtual Access

- Heavy Ion collisions: VA1-NLOAccess (WP10)
- Nucleon structure: VA2-3DPartons (WP11)
- Support for various work packages in STRONG2020

- IMPACT:
  - Fits to experimental data: CERN, BNL, Jlab,
  - Design of new experiments: Electron Ion Collider in US and China
  - Study of phenomenological sensitivity for new ideas

# VA1-NLOAccess (WP10)

Relativistic heavy ion collisions



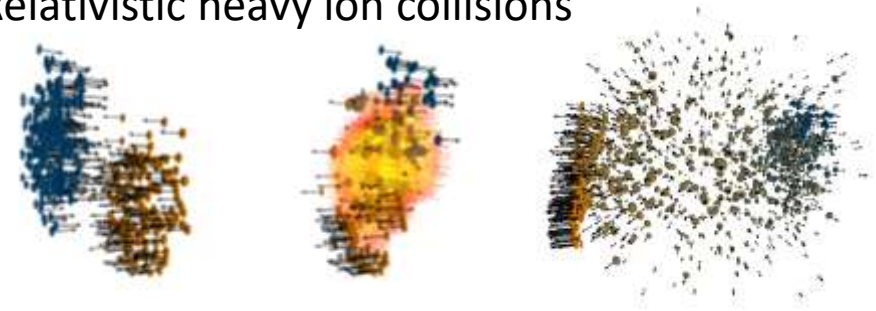
**Objectives:** Web based access to automated tools to evaluate heavy ion collisions observables: production rates or kinematical properties - of scatterings involving hadrons.

**Achievements in second year:**

- Update of IT resources
- Usage of modern programming languages and compilers like PYTHON
- Continuous development and modernisation of main program codes
  - Monte Carlo event generator for collider studies: MADGRAPH5aMC@NLO,
  - Amplitude calculation for bound states of heavy quarks: HELAC-ONIA
  - General purpose Feynman diagramm calculation: FDC
- Steady Access during Pandemic, deliverable reports D10.1 and D10.2

# VA1-NLOAccess (WP10)

Relativistic heavy ion collisions



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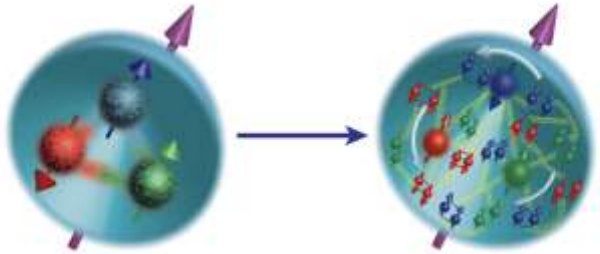
**Achievements in second year:**

- Increase of registered users to about 250 users world wide, substantial participation of Master- and PhD-students
- More than 40 international oral presentations, tutorials, master classes and hands-on training
- Several published review articles based on NLOAccess
- Regular meetings of the International Assessment board
- More than 3000 runs on cloud services provided by NLOAccess
- Users from Europe: 56,68%; Asia: 20.65%; North America: 18.62%; Africa; South America; and Oceania

Spatial structure of proton and neutron



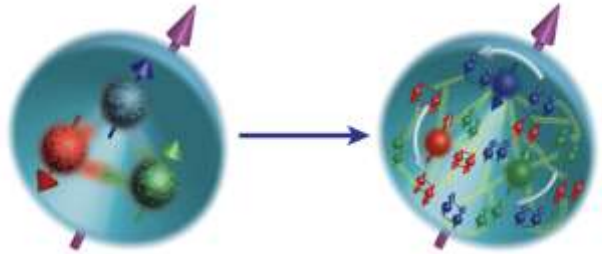
# VA2-3DPartons (WP11)

**Objectives:** Development of a new combined framework to extract generalized (GPDs) and transverse momentum dependent (TMDs) parton distributions, with higher order fixed and twist corrections, from fits to experimental e-p and p-p data.

**Achievements in second year:**

- Update of PARTONS web page
- Usage of modern programming languages and compilers like PYTHON
- Extension of fitting procedures for experimental data and observables
- Steady Access during Pandemic, deliverable reports D11.1 and D11.2

Spatial structure of proton and neutron



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**Achievements in second year:**

- Access from Europe, US and China: Ab out 800 registered users
- VA2 is vital for the development of the next generation large scale projects like the EIC in the US and the EICC in China
- Many presentations and publications based on 3DPartons

# Virtual Access

- Virtual Access established as a new tool in hadron physics community
- Vital for the analysis of existing experiments
- Substantial and important contribution for the design and exploration of new facilities
- A widely used tool, needs to be maintained in a sustained way