‘The strong interaction at the frontier of knowledge: fundamental research and applications’

VA1 — Automated perturbative NLO calculation for heavy ions and quarkonia

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STRONG-2020 Kick-off meeting

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VA1-Virtual access to Automated perturbative NLO calculation…

(Spokesperson: Jean-Philippe Lansberg)

Objectives : NLOAccess gives access to automated tools generating scientific codes allowing anyone to evaluate observables — such as production rates or kinematical properties — of scatterings involving hadrons.

The automation and the versatility of these tools are such that these scatterings need not to be pre-coded. In other terms,it is possible that a random user may request for the first time the generation of a code to compute characteristics of a reaction which nobody thought of before. NLOAccess will allow the user to test the code and then to download to run it on its own computer. It essentially gives access to a dynamical library.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824093.

VA1-Virtual access to Automated perturbative NLO calculation…

WP tasks

1. Setting-up an international assessment board of 8 researchers
2. Elaboration of online user manuals for the main current application: (i) nuclear beams, (ii) meson beams and (iii) quarkonium-related reactions
3. Extension of the existing portal (selecting coherent sets of parameters for quarkonium observables)
4. Extension of the existing portal (automatic generation : nuclear modification factors for the case of proton-nucleus and nucleus-nucleus collisions using global fit of nuclear PDFs)
5. Organisation of a workshop and of yearly meetings to improve the portal based on the feed-back of early users
6. Key studies advertising the performance offered by the portal
7. Publication : the hadronic add-ons of MADGRAPH and the extension of HELAC-ONIA
8. Investigation of the possibility for users to run the generated codes on their own computing facilities

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Outreach to new users:

— submit abstracts for oral communication in multiple international scientific meetings

— organise a workshop aiming at,

- collecting suggestions and help for improvements and additions for advanced users,
- introducing other colleagues to both the automated codes behind the portal and the best usage of the portal.

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VA1: NLOAccess
Update on progress

- « Cloudification »
- Webportal running (https://nloaccess.in2p3.fr/)
- Users & processes database OK
- Storage of results in dedicated cloud space
- Security issues + New user registration process OK
  - providing access to local computing resources is exerced with care
  - ⇒ resources login accounting (behind the scene)

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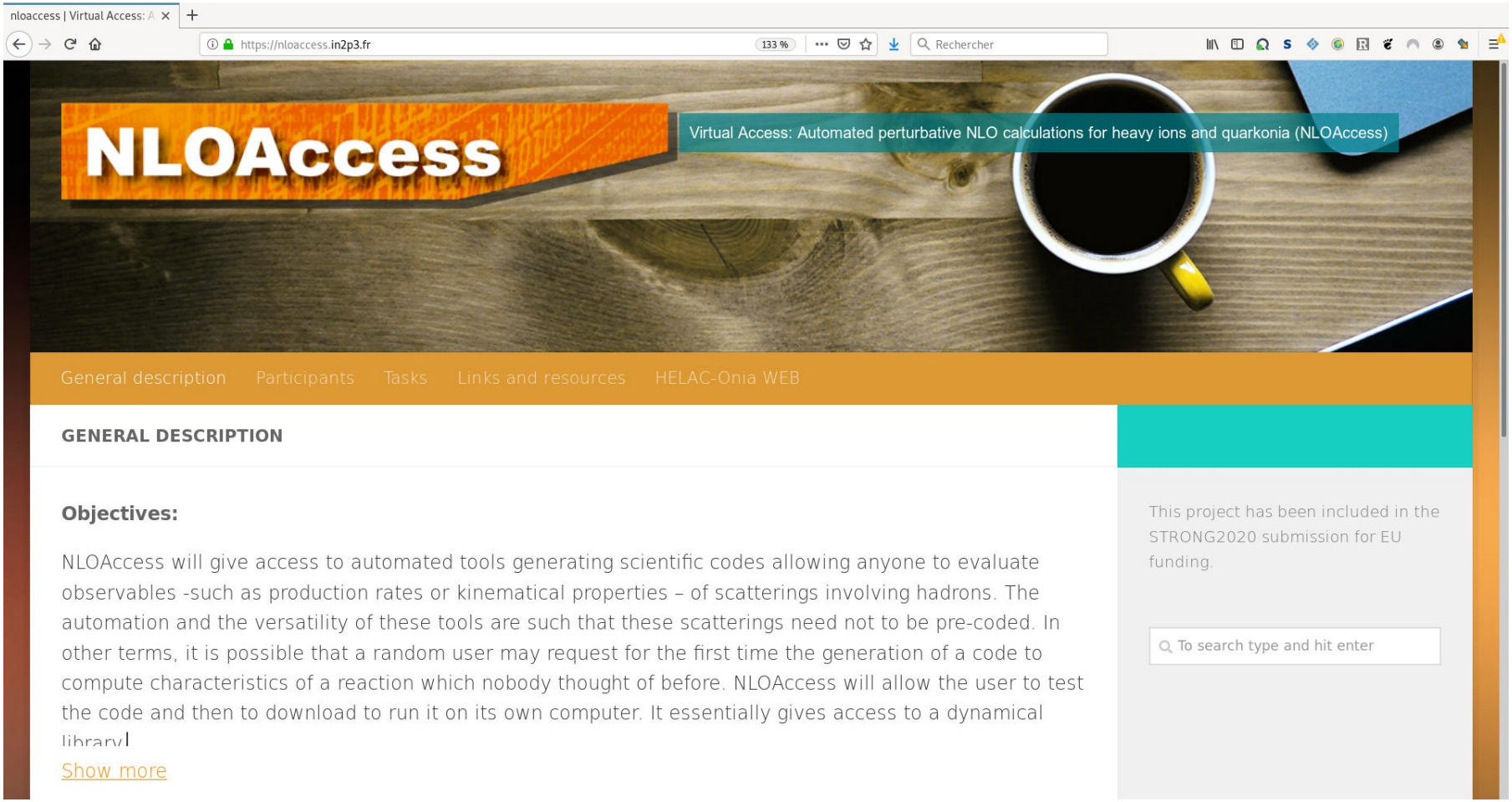

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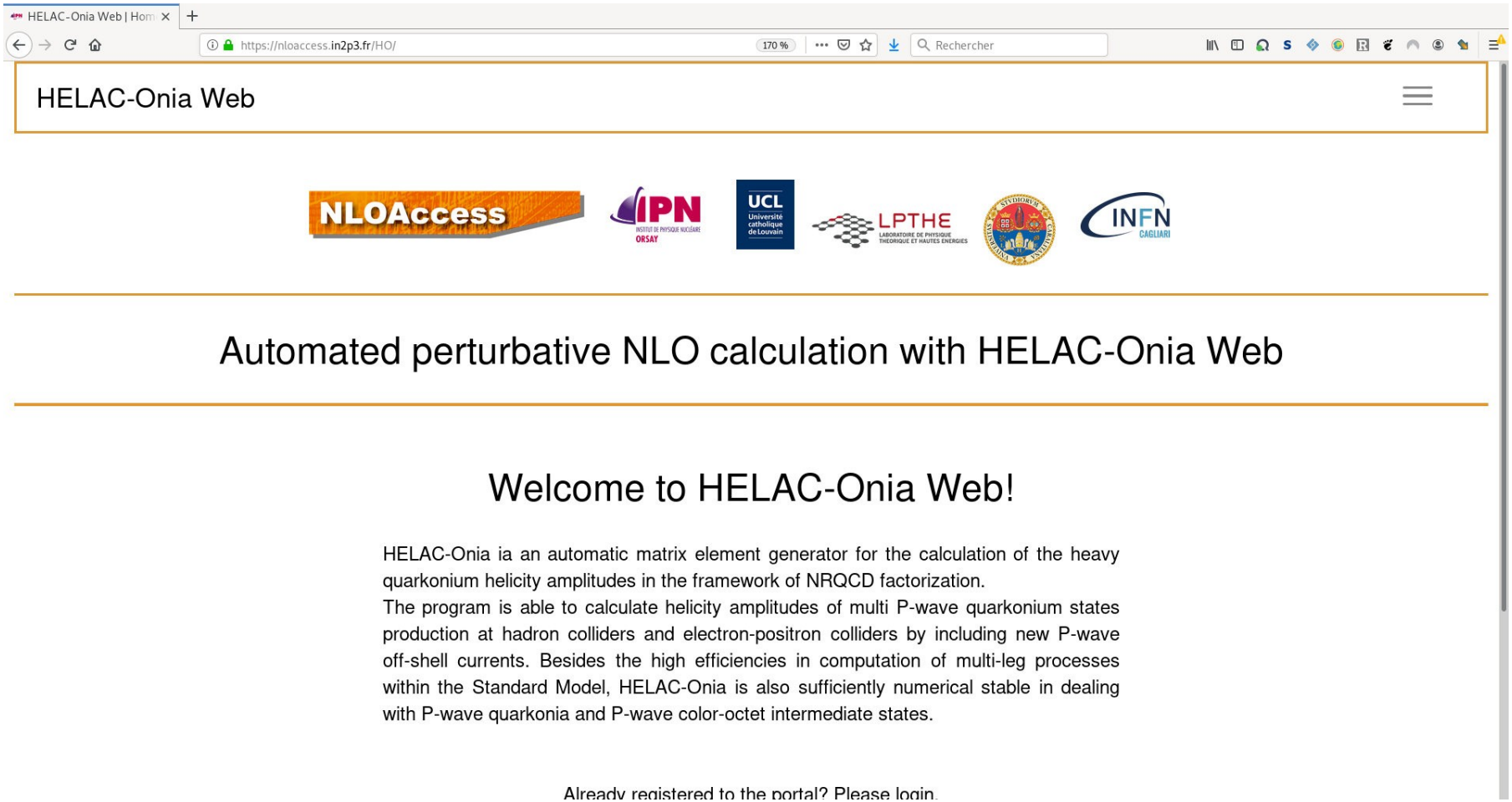

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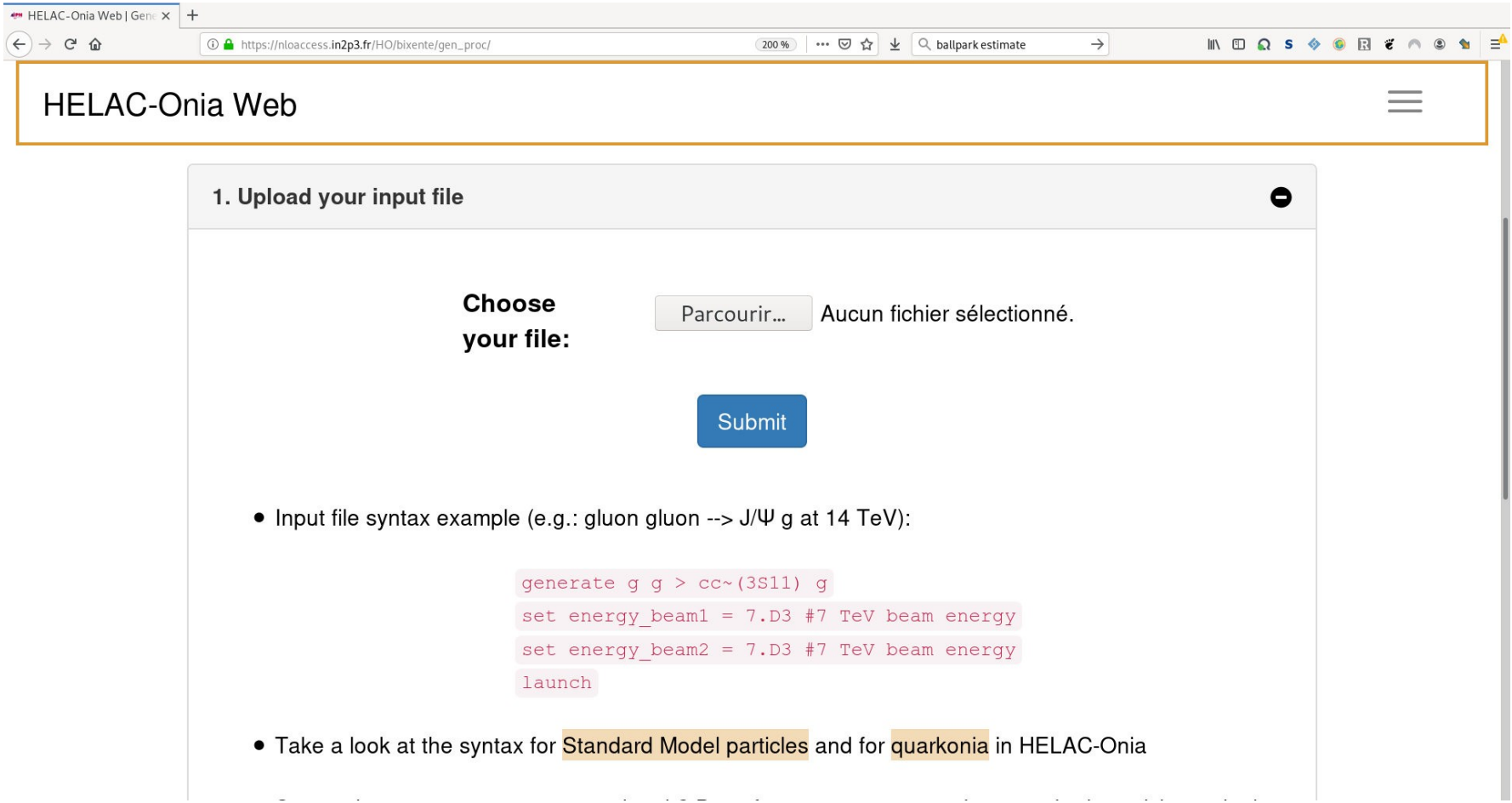

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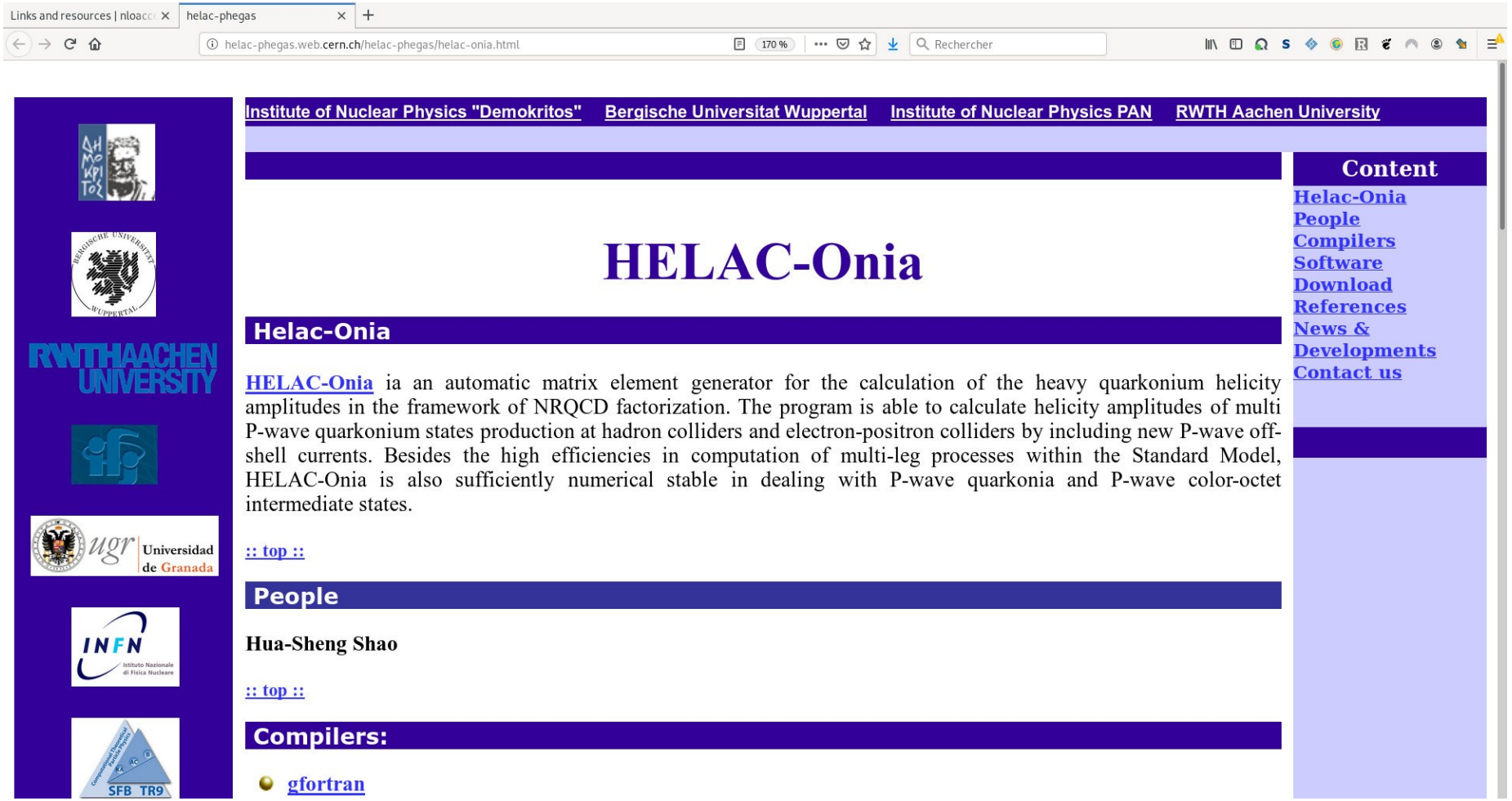

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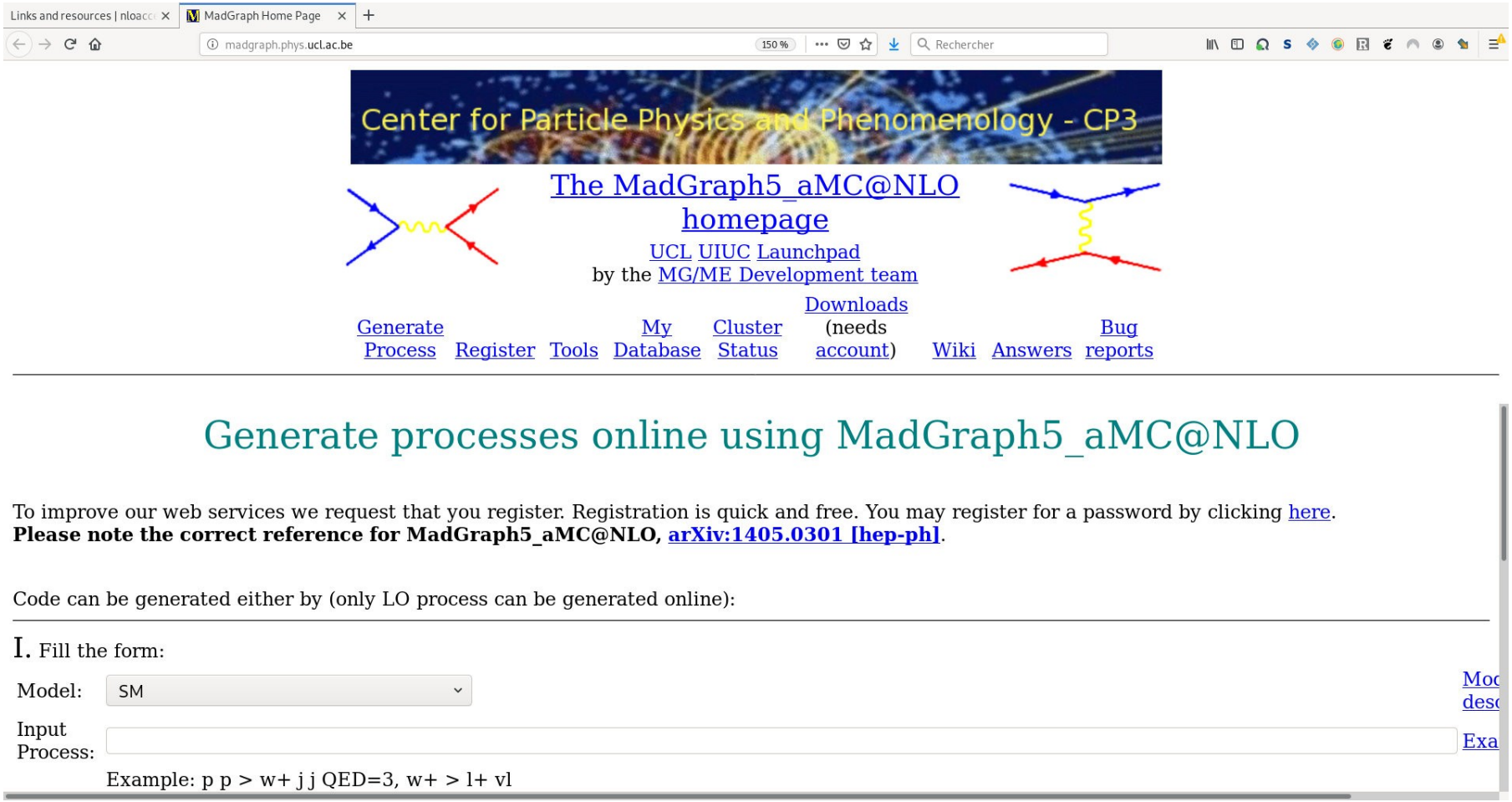

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- **Hiring a dedicated computing engineer with physics background has started:**

  (in progress, will occur before the end of year 2019)

- *L'ingénieur(e) d'études recruté(e) aura pour mission d'assurer la maintenance du portail virtuel NLOAccess et d'y inclure de nouveaux codes et le cas échéant d'optimiser leur fonctionnement, de faire la publicité scientifique du portail virtuel ainsi que d'assurer le support aux contributeurs au portail et à la communauté des utilisateurs.*

- ***Activités :***

  - *• Maintenance du portail virtuel NLOAccess (interface web ; base de données des utilisateurs et reporting des usages ; mise à jour des codes inclus ; définition, mise en place et mise à jour de la politique d'usage ; ...)*
  - *• Inclusion de nouveaux codes (en plus de Madgraph et HELAC-Onia) en collaboration avec leurs auteurs et le cas échéant optimisation de ceux-ci*
  - *• Support au développement de Madgraph et HELAC-Onia dans le cadre des objectifs de NLOAccess (automatisation avec calculs de corrections radiatives)*
  - *• Rédiger et mettre à niveau les documentations techniques et fonctionnelles*
  - *• Support aux contributeurs et aux utilisateurs (création de comptes, gestions des bugs, accès à la documentation se rapportant aux codes, rédaction d'un guide de l'utilisateur, réponse aux questions, ...)*

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Deliverables

Deliverable Number[14]	Deliverable Title	Lead beneficiary	Type[15]	Dissemination level[16]	Due Date (in months)[17]
D10.1	Virtual Access provision - multi annual implementation plan over the first 18 months (month 1-18) (D10.1)	1 - CNRS	Report	Confidential, only for members of the consortium (including the Commission Services)	18
D10.2	Virtual Access provision - multi annual implementation plan over the next 18 months (month 19-36) (D10.2)	1 - CNRS	Other	Public	36
D10.3	Virtual Access provision - multi annual implementation for the whole duration of the project (month 1-48) (D10.3)	1 - CNRS	Other	Public	48
D10.4	Assesment Report on the services and the statistics on the access (months 12, 24, 36 and 48) (D10.4)	1 - CNRS	Report	Public	48

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VA1: NLOAccess
Outreach

Organizing a Masterclass : this site is good for providing insight in cross-sections with hands-on experimentation. The expert can share physics and the students can play with all kind of parameters including center of mass energy, angular and energy cuts, couplings… The usual hassle of code installation and configuration is already dealt with, allowing the teacher and the students to focus on the physics.

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