Call for Experiment Proposals at PHELIx

In the frame of the intermediate experimental program FAIR Phase-0 proposals for beamtime at the high-energy/high-power laser PHELIx for the time between April 2019 and March 2020 can be submitted now.

Groups working in the fields of atomic physics, plasma physics, extreme matter physics, and laser-particle acceleration are invited to submit research proposals for beamtime at PHELIx. As experimental areas, the stations at PHELIx and Z6 are available. In total, approx. 170 shifts of PHELIx beamtime can be offered which correspond to roughly 8 experiments, and about 40 parasitic shifts of ion beam at UNILAC (no protons). Experiments granted in this call will run in the above mentioned period after which the granted shifts will expire. The PHELIx and Plasmaphysics Program Advisory Committee (PPAC) will discuss the submitted proposals and recommend the directorate granting experiments with a clear focus on strategic issues and scientific excellence.

Time Schedule / Applications

Proposals for the above mentioned beamtime period can be submitted to the PPAC via the webform https://proposals-phelix.gsi.de/; deadline is 16. July 2018. Editing the application in the webform can be interrupted any time, and continued and finally submitted in a later session; you will receive an entrance key upon first data input. Further details on the application process and the structure of the proposals are given on the PHELIx webpage: www.gsi.de/phelix/beamtime.

Prior to submitting a proposal please consult your local contact person about the technical feasibility of your planned experiment and please note that investments necessary for running the experiment cannot be covered by GSI.

For additional or updated information please consult the webpage of PPAC: www.gsi.de/phelix_committee.

Applicants eligible to the European program 'Laserlab-Europe' are encouraged to submit their applications additionally through Laserlab-Europe (www.laserlab-europe.eu/transnational-access) for obtaining financial support. Note that the application will be supported through the 4th installment of Laserlab: Laserlab IV. Laserlab IV offers financial support for researchers from Europe and since 2016 for users from non-EU countries to some extent.

Technical Information

PHELIx can provide access for laser experiments in the PHELIx hall and alternatively at the Z6 target station. For technical information on the facilities, please refer to the webpage of the PHELIx laser system (www.gsi.de/phelix) or contact the respective person responsible for the target station of interest:

PHELIx petawatt target area (PTA): B. Zielbauer (b.zielbauer@gsi.de), C. Brabetz (c.brabetz@gsi.de);
Z6 target area: A. Blazevic (a.blazevic@gsi.de), D. Schumacher (d.schumacher@gsi.de)
Further contact persons are:
Details on the laser and laser diagnostics: Vincent Bagnoud (v.bagnoud@gsi.de);
Access and support through Laserlab-Europe: Bernhard Zielbauer (b.zielbauer@gsi.de);
Proposal submission and meeting of the PPAC: Karin Füssel (k.fuessel@gsi.de);

Current Laser and Experimental parameters

- Laser Energy: the energy of the laser is adjusted depending on the configuration
  - At PTA, short pulses with up to 160 J in combination with an f = 40 cm, 45° parabola are available.
  - At PTA, short pulses with up to 80 J in combination with an f = 150 cm, 90° parabola are available.
  - At Z6, long (1 – 10 ns) pulses with an energy of about 180 J (depending on pulse length) at 527 nm are available with a f=4 m focusing lens. Two random phase plates creating top-hat foci of 1 mm or 0.5 mm diameter are available.
  - At Z6, short pulses of 15 J at 1054 nm and a pulse duration of 500 fs are also available but not in parallel with the nanosecond beam.

- Pulse profiles
  - The pulse duration at PHELIX is 500 fs by default. The pulse duration can be stretched to a few ps with on-line measurement. Above 3 ps, the pulse duration is set and calibrated off-line, but cannot be verified on-line.
  - The temporal contrast of PHELIX is adjustable between 10^{-7} and 10^{-11} (10^{-12} best effort). By default the contrast will be set to 10^{-7}. The higher contrast values are obtained with a specific contrast boosting module that represents the cutting edge of laser technology. It is not a standard parameter and the proposal must explicitly request its use.
  - A programmable nanosecond front-end allows for pulses with a deterministic pulse profile with 1 ns resolution within a 10ns window.
  - At PTA, a combination of the long and the short pulse can be requested to introduce a fully controllable pedestal. However, the timing jitter between the two frontends will be at least +/- 500 ps.

- Further remarks
  - At PTA, it is possible to introduce apertures to create a double beam. In such a case the total energy in both beams equals 80 J.
  - At Z6, a VISAR system (660nm, 70ns) is available.

Looking forward to scientifically promising experiment proposals!
Darmstadt, May 2018

Prof. Dr. Paolo Giubellino  Prof. Dr. Karlheinz Langanke
Scientific Managing Director  Research Director