

LIGHT collaboration meeting 2015

Report of Contributions

Contribution ID: **10**

Type: **not specified**

Outline and Scope of the Workshop

Monday, 12 January 2015 13:00 (10 minutes)

Presenter: ROTH, Markus (TU Darmstadt)

Session Classification: Welcome

Contribution ID: 11

Type: **not specified**

TNSA with Hollow Laser Beam

Monday, 12 January 2015 13:10 (25 minutes)

Presenter: BRABETZ, Christian (GSI, Darmstadt)

Session Classification: Source Optimization

Contribution ID: 12

Type: **not specified**

PHELIX Contrast and Energy Upgrade / BOA at PHELIX

Monday, 12 January 2015 13:35 (25 minutes)

Presenter: WAGNER, Florian (GSI, Darmstadt)

Session Classification: Source Optimization

Contribution ID: 13

Type: **not specified**

Target Fabrication at TUD

Monday, 12 January 2015 14:00 (25 minutes)

The Detector & Target Laboratory at the TUD-Institute for Nuclear Physics is a small scale university facility with its focus on the development of manufacturing techniques for targets used in particle and laser beam experiments. This presentation informs on our characterization and manufacturing capabilities with respect to target specifications achievable, possible geometries, tolerances and material combinations. We both produce for in-house experiments and supply targets for experiments at key laser and accelerator facilities world wide.

Presenter: SCHAUMANN, Gabriel**Session Classification:** Source Optimization

Contribution ID: 14

Type: **not specified**

The Current LIGHT Beamline at Z6

Monday, 12 January 2015 14:40 (55 minutes)

The experimental parameters and results are presented in detail: The available laser parameters from the PHELIX 100 TW laser beamline, the accessible proton beam parameters from the TNSA source at Z6, the applied ion optics for energy selection and beam transport and the installed radio-frequency cavity. Two operational modes have been demonstrated successfully for protons in the range of 10 MeV energy: 1. energy compression of the bunch to <3% energy spread and 2. phase focusing to a pulse length <500ps, in both cases with about 10^9 protons in a single short bunch.

Presenter: BUSOLD, Simon (GSI, Darmstadt)

Session Classification: LIGHT: Status Quo and Next Steps I

Contribution ID: 15

Type: **not specified**

Development of Fast Diamond Detectors

Tuesday, 13 January 2015 09:20 (20 minutes)

Presenter: JAHN, Diana (GSI, Darmstadt)

Session Classification: Related Research Activities I

Contribution ID: 17

Type: **not specified**

Beyond 2015: a dedicated and unique experimental test-bed

Monday, 12 January 2015 16:30 (30 minutes)

Presenter: BAGNOUD, Vincent (GSI, Darmstadt)

Session Classification: LIGHT: Status Quo and Next Steps II

Contribution ID: **18**

Type: **not specified**

108 MHz stand-alone RF possibilities for Z6

Monday, 12 January 2015 16:20 (10 minutes)

Presenter: VINZENZ, Wolfgang

Session Classification: LIGHT: Status Quo and Next Steps II

Contribution ID: 19

Type: **not specified**

Pulsed power technology in the field of laser-plasma physics - Status update 2014

Tuesday, 13 January 2015 09:00 (20 minutes)

The presented work will summarize the development of pulsed high-field magnets and power converter technology at HZDR in 2014 for application in laser-plasma physics. The talk will focus on miniature magnetic solenoids, pulsed multipole magnets and the generation of high-current pulses.

Presenter: KROLL, Florian (HZDR and TU Dresden)

Session Classification: Related Research Activities I

Contribution ID: 20

Type: **not specified**

The UK A-Sail Ion acceleration collaboration

Tuesday, 13 January 2015 10:15 (40 minutes)

A UK grant funded consortium was formed in 2013 to further research into laser driven ion accelerators for potential medical applications. The consortium which consists of Queens University, The University of Strathclyde, Imperial College London and the Rutherford Appleton Laboratory will coordinate developments in this area. I will report on our efforts to improve the understanding of ion acceleration at high intensities and deliver better beam stability and the development of new cryo target capability and ion beam diagnostics which can operate at high repetition rates. I will present an overview of our work in the first year of this grant and our plans for the future years.

Presenter: NEELY, David (CLF, STFC)

Session Classification: Related Research Activities II

Contribution ID: 21

Type: **not specified**

Post-acceleration of laser generated protons by a high gradient CH-cavity

Monday, 12 January 2015 16:00 (20 minutes)

The linac activities are aimed to increase the accelerating field gradient. A high gradient CH – cavity operated at 325 MHz was developed at IAP – Frankfurt. The accelerating field gradient is expected to reach > 10 MV/m. Within a funded project, this cavity will be further developed towards a high gradient cavity. The new GSI 3 MW Thales klystron test stand will be used for the cavity RF power tests. The results will influence the rebuilt of the Unilac - Alvarez section, aiming to optimize and achieve finally the beam intensities specified for the GSI-FAIR project. Another option for this cavity, it might be used to post-accelerate a proton bunch, generated by an intense laser, from 10 – 16 MeV.

Presenter: ALMOMANI, Ali (Frankfurt University)

Session Classification: LIGHT: Status Quo and Next Steps II

Contribution ID: 22

Type: **not specified**

Optimum parameters for Radiation Pressure Acceleration

Tuesday, 13 January 2015 09:40 (20 minutes)

This work faces on the optimization of the RPA beam quality in dependence of the laser and target parameters: - A relativistic two fluid model of the laser plasma interaction is derived. From this analytical model, two important perceptions will be obtained: 1) An approximation to the maximum achievable kinetic energy. Within this, a termination criterion for the RPA mechanism is achieved, above which the acceleration process collapses. 2)The optimization of the RPA: An analytical prediction is supported by a 1D PIC simulation, to work out the optimum working point for the acceleration process.

Presenter: SCHMIDT, Peter (TU Darmstadt)

Session Classification: Related Research Activities I

Contribution ID: 23

Type: **not specified**

Prospects for "ion topics" at the ARD test facility

Tuesday, 13 January 2015 12:35 (15 minutes)

Presenter: SCHRAMM, Ulrich (HZDR)

Session Classification: Related research Activities III and Discussion

Contribution ID: 24

Type: **not specified**

ELI-Beamlines MEDical and Multidisciplinary applications (ELIMED)

Tuesday, 13 January 2015 10:55 (20 minutes)

Status of the multidisciplinary transport beam line at ELI-Beamlines

Presenter: CIRRONE, Pablo (INFN-LNS)

Session Classification: Related Research Activities II

Contribution ID: 25

Type: **not specified**

Status and perspectives of the PlasmaMED experiment in Italy

Tuesday, 13 January 2015 11:15 (20 minutes)

We will report and discuss the activities so far carried out within the frame of the PLASMAMED experiment in Italy. Experimental results obtained at the FLAME laser in Frascati, at PISA laser installation and in other European laser facilities will be discussed with special emphasis on future perspectives for tests of specialized diagnostics components and beam handling devices.

Presenter: GIOVE, Dario (INFN)

Session Classification: Related Research Activities II

Contribution ID: 26

Type: **not specified**

Materials research applications with high intensity laser driven proton beams

Monday, 12 January 2015 15:35 (15 minutes)

Presenter: TOMUT, Marilena (GSI, Darmstadt)

Session Classification: LIGHT: Status Quo and Next Steps I