

LIGHT –from laser ion acceleration to future applications

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Creation of high intensity multi-MeV ion bunches by high power lasers became a reliable tool during the last 15 years. To face their main problems (large divergence and exponential energy spectrum), the LIGHT collaboration was founded (Laser Ion Generation, Handling and Transport). The collaboration consists of several university groups and research centers, namely TU Darmstadt, JWGU Frankfurt, HI Jena, HZDR Dresden and GSI Darmstadt. The central goal is building a test beamline for merging laser ion acceleration with conventional accelerator infrastructure at the GSI facility and provide highest intensity beams for applications.

In the latest experiments, low divergent proton bunches with a central energy of up to 10 MeV and containing $>10^9$ particles could be provided at up to 2.2 m behind the plasma source, using a pulsed solenoid. In a next step, a radiofrequency cavity will be added to the beamline for phase rotation of these bunches, giving access to sub-ns bunch lengths and reaching highest intensities.

The author will speak for the LIGHT collaboration and give a view on the collaboration's activities and accomplishments so far.

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