

Minutes of RESULTS, PITZ Physics Seminar, 2019-08-22

Project: PIZ

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Agenda:

- 1) Demonstrating High Transformer Ratio Beam-Driven Plasma Wakefield Acceleration - G. Loisch
- 2) AOB

Results:

- 1) Custom Ar gas plasma cell development
- 2) Plasma density measurements – hydrogen spectral line broadening and beam self-modulation
- 3) HTR PWFA simulations – PIC simulations
- 4) HTR PWFA experiment- longitudinal phase space measurement with TDS, achieved $TR=4.6(+2.2,-0.7)$ with numerical reproduction, $TR=5.0(+1.5,-0.4)$ in measurement
- 5) Inhomogeneous focusing of driver and witness: losses and defocusing of witness

Questions:

- 1) Way of presentation of the transformer ratio value achieved
- 2) Mention of beam hosing instabilities
- 3) Birefringent crystal setup principles
- 4) LC product design decisions
- 5) Spectrum of self-modulation: motivation for green line on plot
- 6) Stating the goal of the thesis – experimental demonstration of high transformer ratio above 2 in plasma with pulse shaping (first proof)
- 7) Energy of the driver is not determining the transformer ratio, but energy loss of the driver

Protocol prepared by
G. Georgiev, 22.08.2019