



Contribution ID: 79

Type: **talk**

## Advanced Bunching Scheme at REGAE

*Thursday, September 17, 2015 6:20 PM (20 minutes)*

The field of laser wakefield acceleration offers very high accelerating gradients. To combine the university research on this topic with the expertise of a large and well-established accelerator facility, the LAOLA Collaboration was formed between DESY and the University of Hamburg. One of the campaigns pursued within this framework is the external injection of an electron bunch from a conventional gun into a laser-driven plasma wakefield, which is a promising path towards increased control over the injected electron phase space.

The Relativistic Electron Gun for Atomic Exploration (REGAE), a small accelerator located at DESY, is an interesting candidate for such an external injection experiment due to the short bunches on the order of 10 fs, required for the primary design goal of the machine: Time-resolved electron diffraction.

In this case the particles are compressed using the ballistic bunching method. The shortness of the bunching is limited by non-linearities in the longitudinal phase space. We present a method that allows for a correction of these non-linearities, enabling even shorter bunches.

**Primary author:** Mr ZEITLER, Benno (Center for Free-Electron Laser Science & Department of Physics, University of Hamburg)

**Co-authors:** Prof. GRUENER, Florian (Center for Free-Electron Laser Science & Department of Physics, University of Hamburg); Dr FLOETTMANN, Klaus (DESY)

**Presenter:** Mr ZEITLER, Benno (Center for Free-Electron Laser Science & Department of Physics, University of Hamburg)

**Session Classification:** WG4 - Application of compact and high-gradient accelerators/Advanced beam manipulation and control

**Track Classification:** WG4 - Application of compact and high-gradient accelerators/Advanced beam manipulation and control