The CERN Accelerator School

Contribution ID: **54**                                    Type: **not specified**

# Longitudinal instabilities & Intensity effects

*Thursday, 29 June 2023 09:30 (1 hour)*

In this lecture, dealing with intensity effects, the equations of motion with induced beam voltage are analysed. This allows, first, to describe single-bunch potential well distortion and loss of Landau damping. Then the linearised Vlasov equation is used to derive step-by-step the Lebedev equation. This matrix equation is applied to find the thresholds, growth rates and spectra of unstable multi-bunch beam. The lecture is concluded by discussion of possible beam-instability cures.

**Presenter:**   SHAPOSHNIKOVA, Elena