

Upgrade and First Commissioning of Transverse Feedback System for SSRF

Authors: N. Zhang, B. Gao, L.W. Lai, R.X. Yuan

Shanghai Synchrotron Radiation Facility, Shanghai Advanced Research Institute, CAS, Pudong, Shanghai 201204, P.R. China

Abstract

To be a part of the transverse feedback system upgrade plan in SSRF PHASE II project, a set of Dimtel feedback processors was installed to replace the previous set. In the commissioning, the ability of suppressing the transverse oscillation was tested and evaluated, also, beam diagnostics and control tools of the processors was used for injection transients analysis, tune tracking and bunch cleaning. The results of the commissioning and data analysis will be presented in this paper.

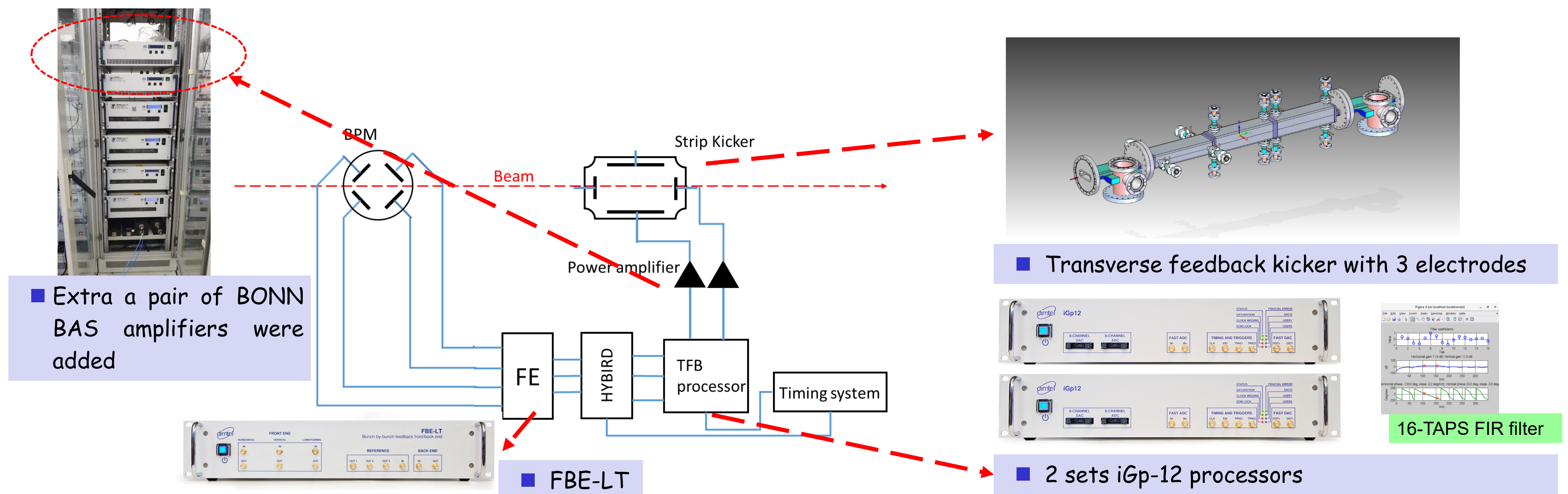
Introduction

New challenges of transverse feedback in SSRF PHASE II:

- impedance of the whole ring would be increased heavily with many new IDs added;
- A new hybrid mode would be setup with one big bunch(10~20mA);

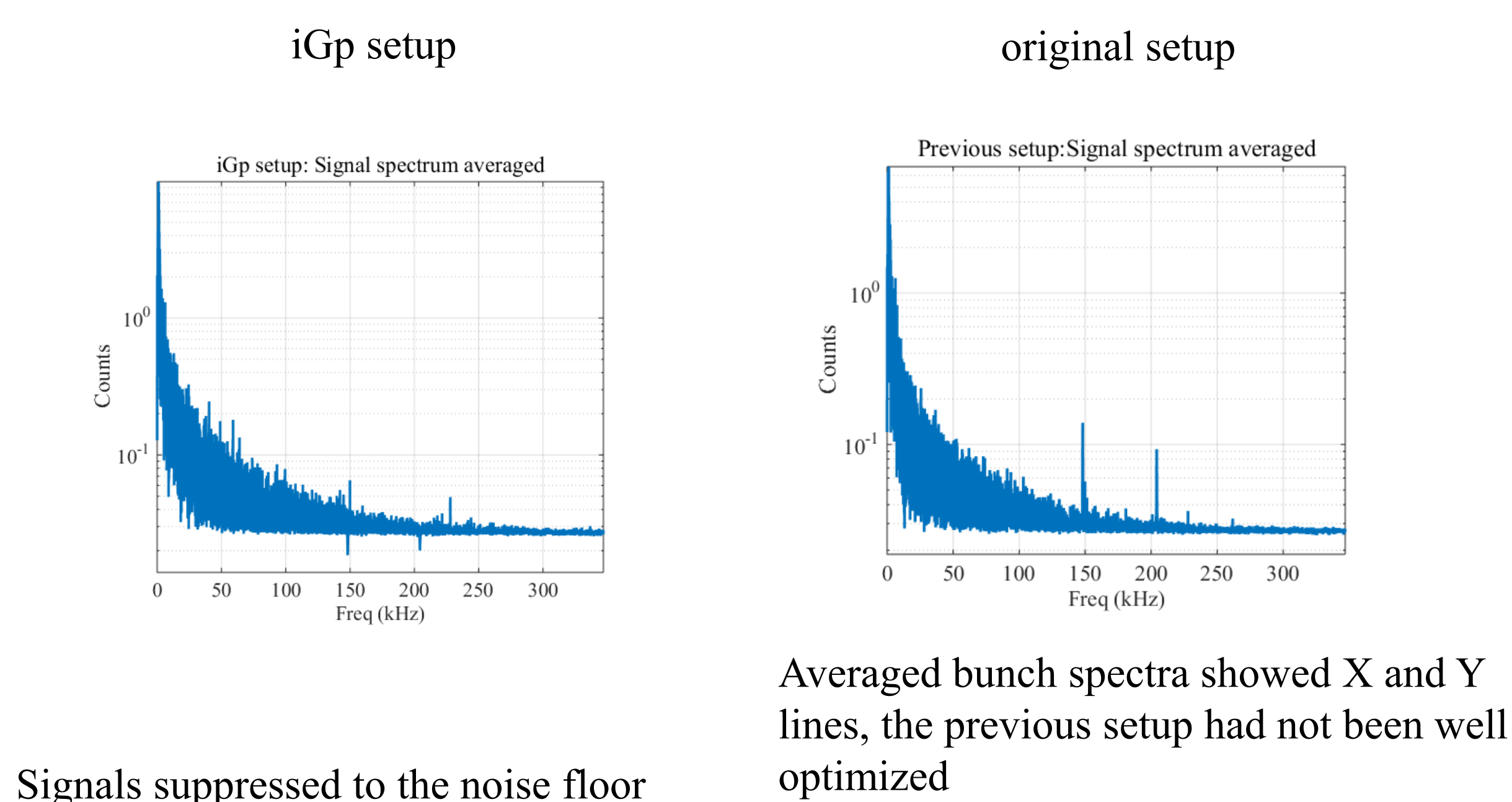
Transverse Feedback System upgrade plan:

- Designing a new 3-electrodes kicker, 1 electrode for horizontal feedback and 2 for vertical;
- 1 set of power amplifier were added for the second vertical feedback;
- Using iGp feedback processors to replace the previous sets, and upgrading all electronics.

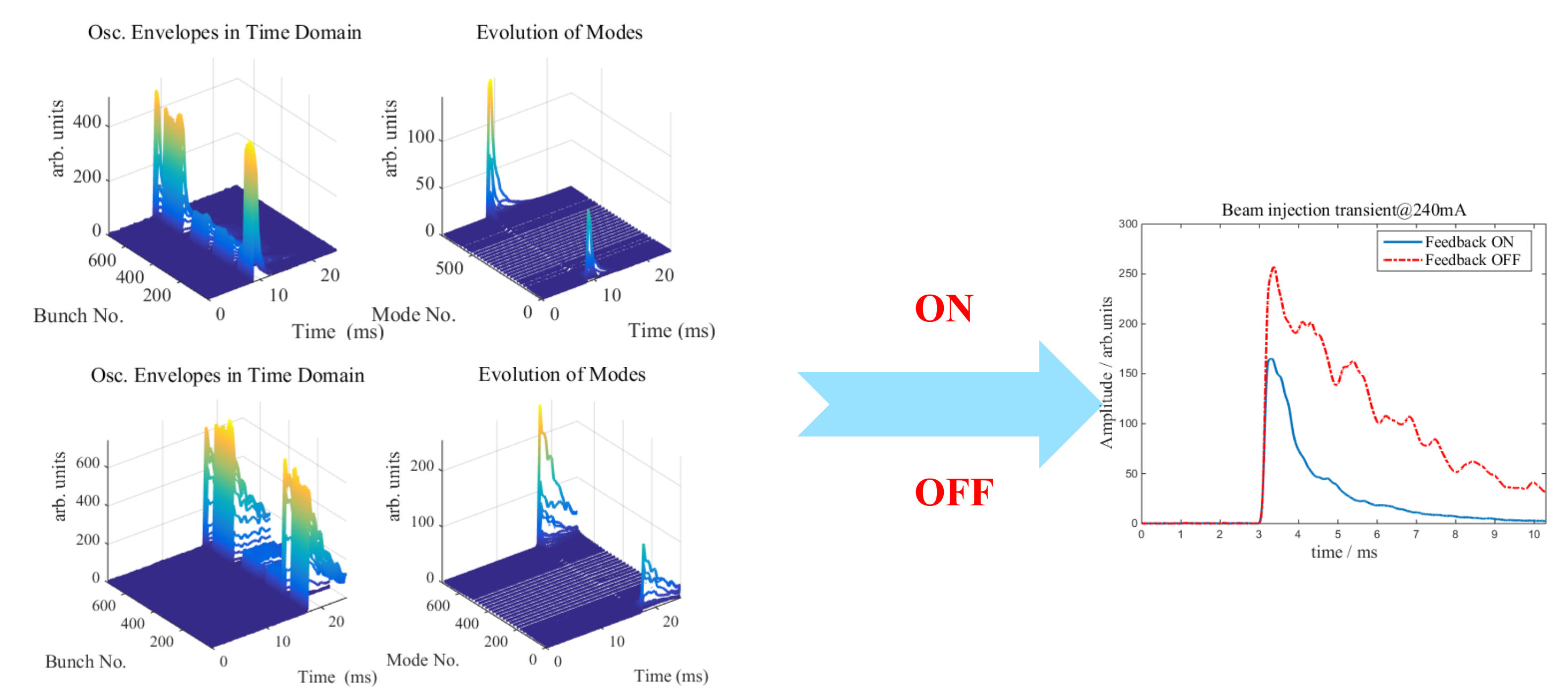


Performance evaluation

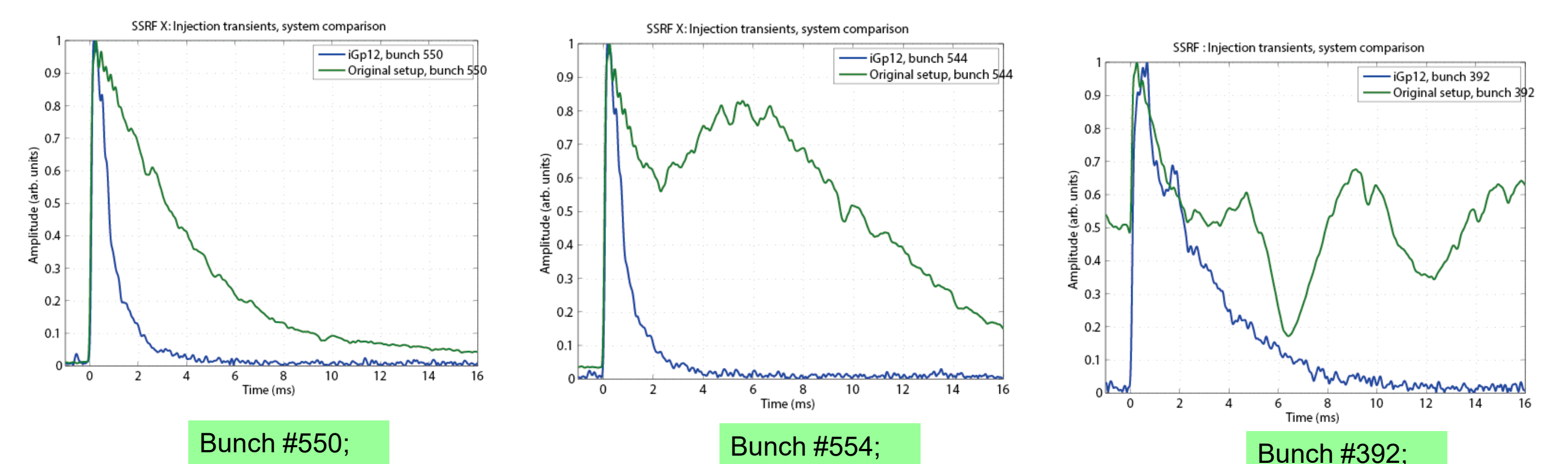
steady-state



Injection transient



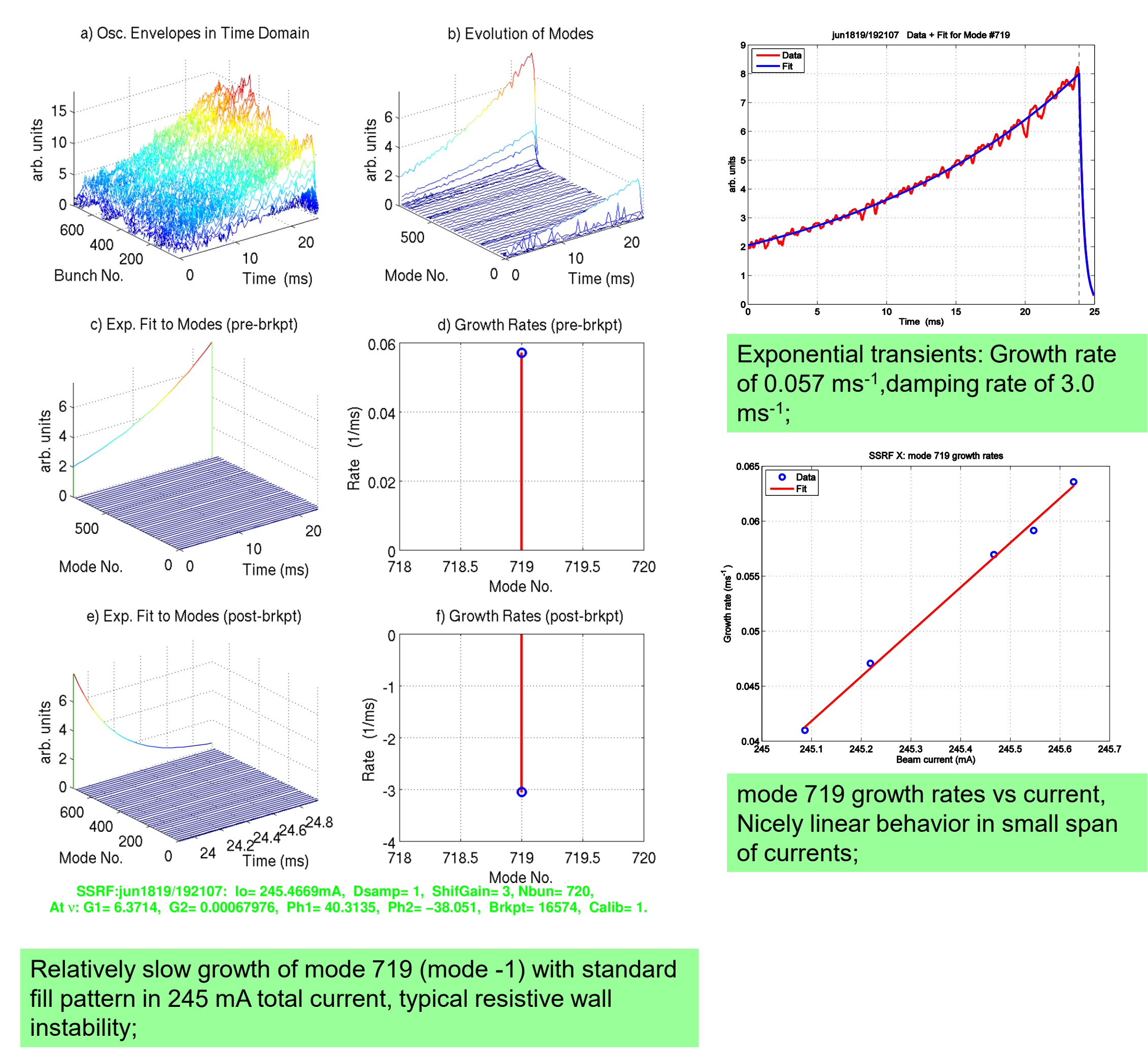
Feedback effect Comparison between 2 setups for individual bunches during injection



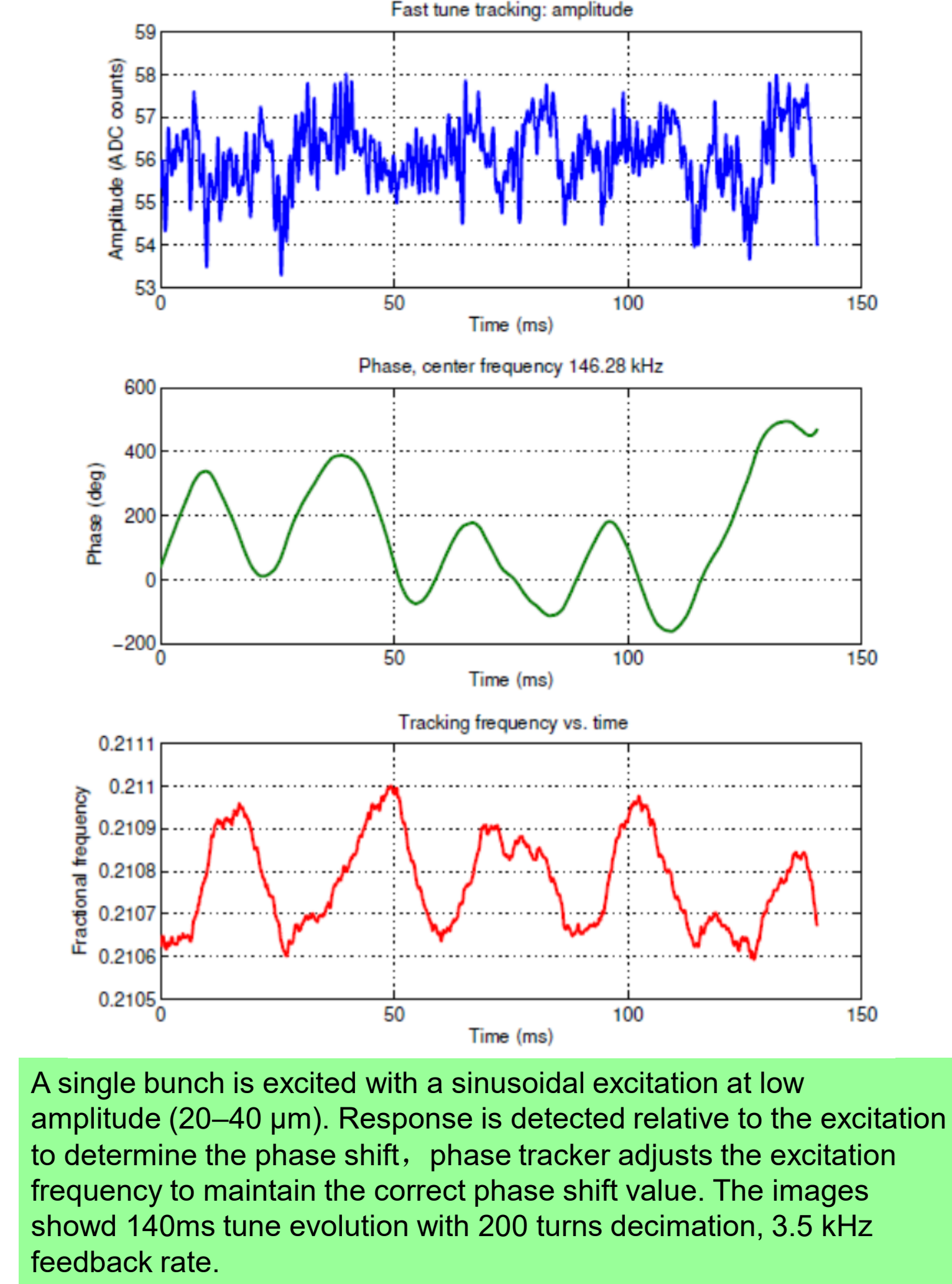
For bunch-by-bunch and mode-by-mode sequences, it is clear that not all bunches were well controlled by the original setup, which was observed and optimized by iGp setup..

Testing

Growth-Damp measurement



Tune tracking



Bunch cleaning

