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## **Improved signal detection of the steady-state microbunching experiment at the Metrology Light Source**

*Monday, 8 May 2023 16:30 (2 hours)*

The concept of steady-state microbunching (SSMB) as a new scheme for the production of high power synchrotron radiation has been demonstrated at the Metrology Light Source in Berlin-Adlershof (MLS) [1]. At the MLS the same undulator section is used for the generation of the micro-structures onto the electron bunch as well as for the detection of the resulting coherent radiation from the micro-bunches one turn later. Due to the enormous difference in the pulse energy of the micro-bucket generating laser and the coherent undulator pulses showing up 160 ns later, the detection is not straightforward. We show in detail the detection scheme, mostly based on fast optical shutters, and the triggering scheme of the experiment. Ideas for further improvements are discussed.

[1] X. Deng et al., Nature, Volume 590, Issue 7847

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### **Footnotes**

### **I have read and accept the Privacy Policy Statement**

Yes

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