

# Electron bunch length measurement at ESRF-EBS using Time Correlated Single Photon Counting

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The commonly used bunch length diagnostics in electron storage rings is the streak camera, fed by visible synchrotron light. Although this instrument is able to precisely measure the shape of very short longitudinal profiles of individual bunches, it also has a major disadvantage: its photocathode is subject to aging upon permanent exposure to incoming light. It is therefore mainly used for dedicated beam studies under controlled conditions.

Time correlated single photon counting (TCSPC) is already used in synchrotron light sources to precisely measure the filling pattern and bunch purity. Modern fast single photon counting detectors and TCSPC electronics open the way to apply this technique to resolve the bunch lengths of stored electron beams.

We present our first results of bunch length measurements using TCSPC at the ESRF.

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