

## RF techniques for spill ripple improvement

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Spill uniformity is a key performance metric for the experimental users in the CERN North Area, who receive slow-extracted protons from the Super Proton Synchrotron. In this contribution, RF empty-bucket techniques are studied to suppress the low-frequency variations in the spill caused by power-converter ripple. The study includes simulation, measurement and the long-term experience after making the solution operational in mid-2023.

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