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Beam loading compensation of traveling wave LINAC to a multi-bunch pulse with gaps

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In the electron-driven ILC positron source, the positron is generated a multi-bunch format with gaps, because it corresponds to a part of the damping ring fill pattern. The beam loading is compensated by amplitude modulation on the input RF (*). In this article, we derive the exact solution for the compensation with gaps. In addition, we evaluate the effect of the time constant (delay) of the input RF modulation due to klystron Q-value.

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Footnotes

*M. Kuriki, "Energy Spread Compensation in Arbitrary Format Multi-Bunch Acceleration With Standing Wave and Traveling Wave Accelerators", in Proc. IPAC'18, Vancouver, Canada, Apr.-May 2018, pp. 307–310. doi:10.18429/JACoW-IPAC2018-MOPMF076

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