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Double Fourier Series Applied to Supraharmonic Determination: The Specific Cases of a Boost and an Interleaved Boost Converter Used as Active Power Factor Correctors

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Abstract : The work presented here investigates the modeling of power electronics converters in terms of their harmonic production. Specifically, it addresses high-frequency emissions in the range of 2-150 kHz, referred to as supraharmonics. This paper models a conventional converter, namely the boost converter used as an active power factor corrector (APFC). Furthermore, the modeling is extended to the case of the interleaved boost converter, which offers advantages such as halving the emissions. Finally, a comparison between the theoretical, numerical, and experimental results will be provided.

Keywords : APFC, boost converter, converter modeling, double fourier series, supraharmonics
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