

## ABSTRACT

# NONLINEAR MODELLING AND BIFURCATIONS IN THE RECTIFIED DC VOLTAGE FED DC-DC BOOST CONVERTER

As the power converters exhibit a wealth of nonlinear phenomena due to the presence of switching element, many researchers and investigators reported about the occurrence of nonlinear phenomena like chaos and subharmonics in power electronics circuits. These phenomena are investigated in current mode control of converter to conform the practical closed loop control of converter. All of those investigations are carried out taking the pure DC voltage as input. But in most of the cases rectified DC voltage is fed to the current mode controlled DC-DC boost converter. So considering the wider applications and to conform the very practical situation, the current mode controlled rectified voltage fed DC-DC boost converter with all the parasitic effects is taken for our study and investigations. For realistic study, a nonlinear model of the same may be developed to study the nonlinear phenomena and bifurcation in details. Routes of chaos may be investigated and proper methods may be developed to control bifurcations / chaos in these systems to stabilize it.

The present investigation will make an endeavour to explore a piecewise solution of the overall chaotic response of current mode controlled rectified voltage fed DC-DC boost converter. This result will be compared with the result obtained for a purely DC fed DC-DC boost converter.

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