MUNINDRA
Deva Nand
Delhi Technological University, Shahbad Daulatpur Delhi-India, 110042
kumar.munindra90@gmail.com

Non-linearity of the Single Layer Graphene Field Effect Transistors

Graphene nanoscale ballistic transport FETs (GFETs) is the new emerging and promising technology, which is ready to add new dimension to the nanoelectronics world and egger for replacement of conventional silicon technology. thus, study of characteristic behaviour of the GFET models at radio (GHz) frequency especially static linearity and nonlinearity performance potential. In this work static nonlinearity behaviour of graphene FET under the ballistic transport approach will be elaborate with help of the close mathematic expression for Harmonic distortion and intermodulation distortion and interception points. The second and third order harmonic and intermodulation distortion are studied with help of mathematical analysis of drain current equation formulated using Mckelvey's flux theory (MFT). The presented close expressions are validated through nonlinear large and small signal circuit models as they have been illustrated in literature.

References

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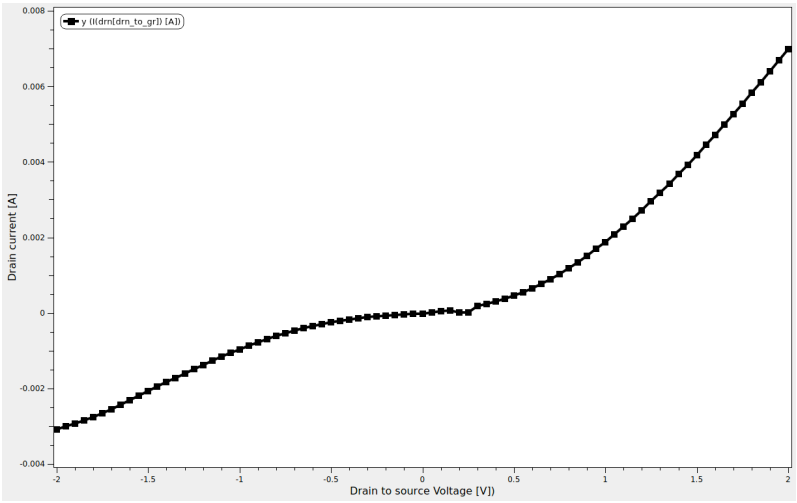

Figure 1: non-linear behavior of the graphene field effect transistors (GFET) shown with help of output characteristic curve at i.e. negative drain current vs negative drain to source Voltage at constant gate voltage of 1 V.