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**IMPACT OF DELTA-DOPED POSITION ON THE PERFORMANCE OF
AlGaAs/InGaAs/GaAs PSEUDOMORPHIC HIGH ELECTRON MOBILITY
TRANSISTOR**

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ABSTRACT

This paper reports on simulation of delta-doped AlGaAs/InGaAs/GaAs Pseudomorphic High Electron Mobility Transistors (PHEMT's) by means of two dimensional device simulations. The commercial two dimensional device simulator Taurus-MEDICI was used to study the band-diagram, threshold voltage (V_{th}), transconductance (G_m) and cut off frequency (f_T) of the PHEMT. Three different devices with single delta-doped layer located at three different positions in the pHEMT layer are simulated. The result shows that the position of delta-doped layer can be optimised to maximise the drain current, transconductance and cut-off frequency. It also can determine the device operation mode, whether as enhancement mode or depletion mode.

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