

Abstract of the Talk: Present state of art for electrostatically-doped tunnel FETs and its future prospects

Important characteristic of the Tunnel Field Effect Transistors (TFETs) to exhibit steep switching properties makes it suitable for applications in the fields of 5G, cloud computing, faster wireless communication and many others. Despite the innumerable possible applications, the heavily doped-source and drain region in TFET demands ion-implantation and cost-inefficient annealing techniques for the optimum fabrication of the device. In this context, Electrostatically-Doped (ED) TFET is the alternative solution for a low-thermal budget device. However, a challenging area in the field of sub-nano scaled ED-TFET is to accomplish abrupt tunneling junction. Recent developments in ED-TFET have led the research community to work on new structures in order to achieve abrupt tunneling junction. The present paper elaborates a large number of existing ED-TFETs along with their specifications and predicted electrical performance. Moreover, a complete state-of-art of performance parameters of ED-TFET such as on-current (I_{ON}), off-current (I_{OFF}), subthreshold swing (SS) and threshold voltage (V_{th}) have been thoroughly discussed in this paper. A detailed and methodical study of this kind may help the research community to find the well collated relevant information about ED-TFETs at one single place.