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Capacitance of Nanowire with different cross sections and different materials at different frequencies[1] ABBAS ARAB, QILIANG LI, Dept. of ECE, George Mason University, GEORGE MASON UNIVERSITY TEAM — During the past half century, feature-size of electronic elements has been reduced dramatically. Semiconductor industry expects this down-scaling to be continued for at least next decade. Among different approaches proposed for reducing the size of electronic elements, is nanowire (NW) based elements such as nanowire field effect transistor (NW-FET). NW approach offers a coaxial gate-dielectric-channel geometry that has advantage of electrostatic control in down-scaling the electronic elements. NWs can be grown in different cross sections depending on the material used as the core of the coaxial structure. Despite so much interest and research on this field, a complete set of study on nanowire capacitance will be very useful for nanoelectronics. In this work, we are going to study different NW structures with different materials and cross sections including: square, triangular, circular and hexagonal in different frequencies. We will study the effect of oxide thickness, oxide material and rotation of cross section, in cases that are not symmetric to rotation, on NW behavior.

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