At low frequencies the entire cross sectional area is carrying the current. As the frequency increases to the RF and microwave range, the current is essentially carried near the surface with a reduced penetration depth. At the higher end of microwave frequency range, the current is essentially carried near the surface with a reduced penetration depth.

Design and fabrication of a new high gain multilayer negative refractive index metamaterial antenna for X‐band applications. Omid Borazjani.

Analytical study of surface wave multiple refraction in composite media. Reza Nourian, Karim Salehi, and Mohammad Bagher Yaghoubi. 

Design of a low frequency switched capacitor power amplifier using a combination of loadpull and load line methods for a dual band, GaN transistor. Masoud Abolhassani, Ahmad Banihashemi, and Mohammad Bagher Yaghoubi.


RF and Microwave Circuit Design: A Design Approach Using KEYSIGHT Genesys Software by Ali A. Behagi, Hardcover | Barnes & Noble®. This textbook covers the microwave and RF engineering topics from an Electronic Design Automation (EDA) approach. The topics include RF and microwave concepts and components, transmission lines, network parameters, maximum power transfer requirements, lumped and distributed impedance matching, and several linear amplifier designs.