DIELECTRIC RESONATOR ANTENNAS, THEORY AND DESIGN

Ahmed A. Kishk and Branko Kolundzija

Recently, interest in small efficient antenna has increased. One of the candidates is the dielectric resonator antenna (DRA), which is made of high dielectric constant materials and mounted on top of a ground plane or on a grounded dielectric substrate of lower permittivity. This antenna is more efficient than the microstrip antenna because of the absence of conducting edges. Also, wideband DRA are possible. The techniques used to achieve broadband DRA antennas are discussed. Some DRA's has achieved over 50% bandwidth. The short course provides an overview for the development of the DRA. The theory and design principles and the radiation mechanisms will be discussed. Several excitation techniques are discussed with their applications to different DRA types. Numerical techniques used in the design of the DRA antennas are considered. A demo of commercial software that can be used to design and analyze arbitrarily shaped DRA is considered. The DRA array design and performance are considered.