

mm-Wave Silicon Monolithic Phased Arrays

Abstract: Phased arrays were invented in early 20th century, deployed in military radars during World War II, and advanced in the defense and aerospace for over half a century. In 1965, Gordon Moore predicted that advancement in integrated circuit technology will enable monolithic microwave phased arrays that can revolutionize radar. Nearly four decades later, monolithic microwave silicon phased arrays were reported for the first time. Today, monolithic radio frequency, microwave, and millimeter wave phased arrays are turning mainstream in commercial products including automotive radars and high speed wireless transceivers. The fifth-generation of wireless communication standards is likely going to include mm-wave operation using antenna arrays and beamforming. This talk will cover the basics, history, applications, and advancements of phased arrays followed by state-of-the-art realizations at the mm-wave frequency range.