# Stretchable approach to the coaxial cable for radio-frequency transmission: design and simulation

김주현, 정수환†
경북대학교
(shjeong@knu.ac.kr†)

The transmission lines with large bandwidth are capable of transmitting lots of data simultaneously. For such high-speed communications, radio-frequency (RF) is quite necessary. However, RF signals are not only susceptible to electromagnetic interference (EMI), but also having risk of signal loss and leakage. Coaxial cable, invented to resolve aforementioned issues, consists of signal line, shield (ground line) separated by a dielectric layer, and the outermost jacket. In this structure, the shield plays a key role in EMI shielding and then the minimum loss can be achieved in a high-frequency range. Despite its advantages, coaxial cable applications are sometimes limited, due to its limited flexibility and stretchability. In modern electronic devices, there are numerous units exchanging data in highly integrated circuits. Furthermore, the devices are being developed to accommodate various mechanical deformations with rising of the wearable device market. Herein, the new mm-scale cable structure is suggested to endow the cable with stretchability. In addition, transmission characteristics are simulated based on the theoretical equations.