

TOPIC

Low-profile Stop-Pass FSS Design for 6G Co-aperture Platform

SPEAKER

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DATE	Monday, 21 September 2026
TIME	10:30 AM – 11:00 AM
VENUE	E7-03-07 - Seminar Room 2 Zoom: https://nus-sg.zoom.us/j/83666609574?pwd=WKynHDR5udtnb9HloKmNEXlK7VOrtt.1 Meeting ID: 836 6660 9574 Passcode: 051211
HOST	Dr. Danyu Yang, Research Fellow

ABSTRACT

Frequency selective surfaces (FSSs) are spatial filters used for spectrum management in wireless systems. This talk focuses on a 6G base-station shared-aperture scenario, in which a bandpass FSS with a broad lower stopband is required to allow antennas in adjacent bands to operate within the same aperture. The central challenge is to introduce a sufficient number of transmission poles and zeros, which conventionally requires multilayer or three-dimensional structures. A surface-impedance-based design method is presented to realize these poles and zeros within a single-substrate structure. The resulting geometry, however, contains many strongly coupled geometric parameters, each of which influences several design metrics simultaneously; as these metrics trade off against one another, manual tuning becomes impractical and a synthesis method is needed. Such synthesis is further complicated by the one-to-many problem, in which a single target response may correspond to multiple valid geometries. A tandem neural network (TNN)-based method is introduced to address this issue. A fabricated prototype exhibits a 1-dB passband of 7.18–7.89 GHz, a 20-dB lower stopband of 3.13–6.70 GHz, and a lower-edge roll-off of 80 dB/GHz, validating the proposed design and synthesis methods.

ABOUT THE SPEAKER

Fanglin Ren is a Ph.D. candidate with the Department of Electrical and Computer Engineering, National University of Singapore. She received the B.Eng. degree in electromagnetic field and wireless technology from the University of Electronic Science and Technology of China, Chengdu, China, in 2020, and the M.Sc. degree from NUS in 2021. Since 2022, she has been pursuing the Ph.D. degree at NUS, where her research focuses on frequency selective surfaces (FSS) and metasurfaces.