Metadevices Based on Electromagnetic Localization and Canalization

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***Abstract*—Electromagnetic localization and canalization with periodic structures brings the concept of high-frequency surface plasmon polaritons and trapped-mode resonance into electromagnetic manipulation in low-frequency regime, which would extend the application range of microwave devices. Here, we will introduce our recent metadevice design based on the electromagnetic localization and canalization effect. Benefited to the effective electromagnetic confinement, the deep subwavelength wave manipulation is achieved in microwave decoupling components and resonators, which might pave the way to novel industrial application on the 5th-generation communication and biosensing.**

Keywords—metamaterials; electromagnetic localization; canalization; resonator; effective medium theory.