



**INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS**

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SHORT ABSTRACT

In-band Full-duplex (FD) radio is an emerging technology, which transmits and receives the signal simultaneously at the same frequency. FD has the potential of doubling the throughput with low latency. The main challenge associated with an FD system is the self-interference (SI). The SI in an FD radio is caused by the leakage and the echo signals from the transmitter to its own receiver. Due to the direct or the parasitic path, the transmitted signal gets leaked into the receiver in an FD radio. Whereas an echo signal occurs due to the reflection of the transmitted signal in free space. The large in-band SI signal makes the demodulation of the weak desired signal a hard task. To mitigate the problem of SI in an FD radio, an SI canceling circuit which generates an SI canceling signal is often used. The SI canceling circuit should be capable of providing variable attenuation, variable time-delay, and variable phase delay. Apart from the SI signal, blockers from different bands can degrade the performance of the FD receiver, especially in the sub-6 GHz range. The main objective of this research is to investigate the fully integrated circuit techniques for SI cancellation in FD receivers.