

## ENHANCED UNDERWATER ACOUSTIC COMMUNICATION USING F-SGM AND SPECTRAL COHERENCE BASED WAVELET TRANSFORM

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**Received: 07 Jun 2022**

**Accepted: 07 Jun 2022**

**Published: 07 Jun 2022**

### **ABSTRACT**

*The acoustic channels beneath the sea are exceedingly complicated and active. Doppler shift, multi-path effect, phase noise, and temporal variation all affect underwater audio communication signals. Due to the features of the maritime environment, enacting UWA channels for reliable high data rate underwater wireless communication is extremely difficult. UWCs use the most common communication technologies, such as optical, magnetic induction, electromagnetic, and acoustic communications. In this work, entirely generalised spatial modulation in which one constant number and one multiple number of antennas are active to transmit data symbols in any time interval for underwater audio communication (UWAC). This work proposes the Spectral coherence based Wavelet Transform for adaptive channel estimation method over the underwater time-varying MIMO channel. Furthermore, maximum likelihood (ML) decoder is employed to detect the transmitted data and antennas indices from the received signal and the estimated UWA- MIMO channel.*

**KEYWORDS:** *Massive MIMO, Statistical Channel State Information, Underwater Acoustic.*