Abstract

How to achieve high data rate coherent underwater acoustic (UWA) communications is a challenging topic due to several unique properties of UWA environments, especially in shallow water acoustic environments. Time reversal, or phase conjugation in the frequency domain, is a process engages in achieving high data rate and reliable high frequency coherent communications in time-varying UWA environments, while reducing the system complexity significantly compared with traditional methods, such as using large arrays of sensors, or redundantly transmitting at different time. Therefore, time-reversal technique has been approved to be a promising technique in future UWA communications and networks. In his paper, we will present an overview of the application of the time-reversal process to acoustic communications. The content includes basic concept and mechanism of time-reversal in UWA communications, passive and active time-reversal UWA communications, application challenges of the time-reversal technique in UWA communications and networks.
- W. J. Higley, P. Roux and W. A. Kuperman. “Relationship between Time
Time Reversal in Underwater Acoustic Communications


no. 2, pp. 838-851, 2006

Index Terms
Computer Science
Communications

Keywords
Coherent UWA communications  time-reversal technique