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**High Rate Acoustic Link for Underwater Video Transmission
Using Differential Amplitude Phase Shift Keying (DAPSK)**

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A high bit rate acoustic link for underwater video transmission is examined. Currently, video encoding standards allow video transmission at bit rates on the order of 64 kbps. To provide an acoustic transmission capability that meets this bit rate requirement, we focus on the use of high-level bandwidth-efficient modulation methods. We consider the use of 16-, 32- and 64-Differential Amplitude and Phase Shift Keying (DAPSK) with varying number of amplitude levels. DAPSK does not require explicit carrier phase synchronization at receiver, but instead relies on differentially coherent detection. It thus represents an alternative to conventional Quadrature Amplitude Modulation (QAM) methods, whose high-level constellations are sensitive to phase distortion induced by the channel. System performance is demonstrated experimentally, using 25000 symbols/sec at a carrier frequency of 75 kHz over a short vertical path. Excellent results were obtained thus achieving bit rates as high as 150 kbps, which are sufficient for real-time transmission of compressed video.