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**Nonlinear multifrequency transmitter for seafloor characterization**

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In the underwater context, it is known that the frequency diversity provides essential information to derive the nature of the seafloor. This presentation deals with a new concept based on a transmitter that generates simultaneously several harmonic frequencies. Our final objective is to assert the feasibility of a multi-frequency tool whose desirable characteristics could be specified for applications such as detection of sunken oil slicks, sediment characterization, or surveys before cable or pipe laying. The acoustic beams are generated through the harmonic components of a shock wave radiated by an antenna driven at a high level. The source is unique in time and space so that the multi-frequency responses are inherently perfectly matched. A numerical model based on a generalized KZK equation has been developed to estimate the saturated fields. Measurements of the first harmonic fields obtained in our outdoor tank facility are compared with simulations.