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**Experimental investigation of the scattering of sound by solid
spheres in a liquid**

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The framework of this investigation is the characterization of spheres in a liquid by means of ultrasound. Experiments are performed to study the effectiveness of the use of bounded ultrasonic pulses in single transmission and in double through transmission to characterize size and shape of spheres. Special attention is paid to the influence of the beam width and frequency in comparison with the size of the sphere. The research is performed by means of a new generation polar c-scan apparatus. In a first step the interaction of sound with a single sphere is studied. In a second step two spheres are studied where one sphere crosses the sound path through the other sphere. Limitations for detection and characterization of spheres depending on their relative position and on the characteristics of the applied ultrasonic pulse are described in detail. The research is performed in the framework of the use of ultrasound for biomedical applications.