

## ABSTRACT

A systematic experimental evaluation of the ultrasonic pulse echo technique for the determination of elastic constants  $C$  and pressure derivatives  $\frac{dC}{dP}$  has been made by inter-comparing the directly measured values of these two quantities which are associated with wave propagation in the three simple directions  $[100]$ ,  $[110]$ , and  $[111]$ . The measurements were made on three single crystals of silver with 10 megacycle ultrasonic gear and a pressure range to 9,500 atmospheres. Comparison of the measured values of the elastic constants yielded a maximum discrepancy of 0.3%; a similar comparison of the measured values of the pressure derivatives yielded a maximum discrepancy of 3.5%.